

# CHAPTER

# 1

# CROP PRODUCTION, FIBRES AND PLASTICS



## Key Insights

- ✓ To study about the necessity and importance of food.
- ✓ To understand the terms 'crop' and 'agriculture'.
- ✓ To know about basic agricultural practices.
- ✓ To learn about transplantation and crop rotation.
- ✓ To study about natural and artificial fibres.
- ✓ To learn about plastics and its types.



## Introduction

★ Human population is increasing day by day; therefore, their food requirements are also increasing along with it. Therefore, it is necessary to increase the quantity of food to fulfil their increasing demand of food without compromising with the nutrition quality. This is achieved by farming more lands, increasing the food production and managing the production and distribution of food.



## Food

## Basic Information

★ All plants are producers that make their own food through the process of photosynthesis. They are also known as autotrophs. All animals and human beings are consumers because they obtain their food directly or indirectly from the plants.

## Significance of Food

- ★ Food provides energy to living organisms to perform their metabolic activities.
- ★ It keeps living beings healthy and provides essential nutrients to help fight against diseases.
- ★ It helps in the repair and replacement of damaged parts of the body.

## Components of Food

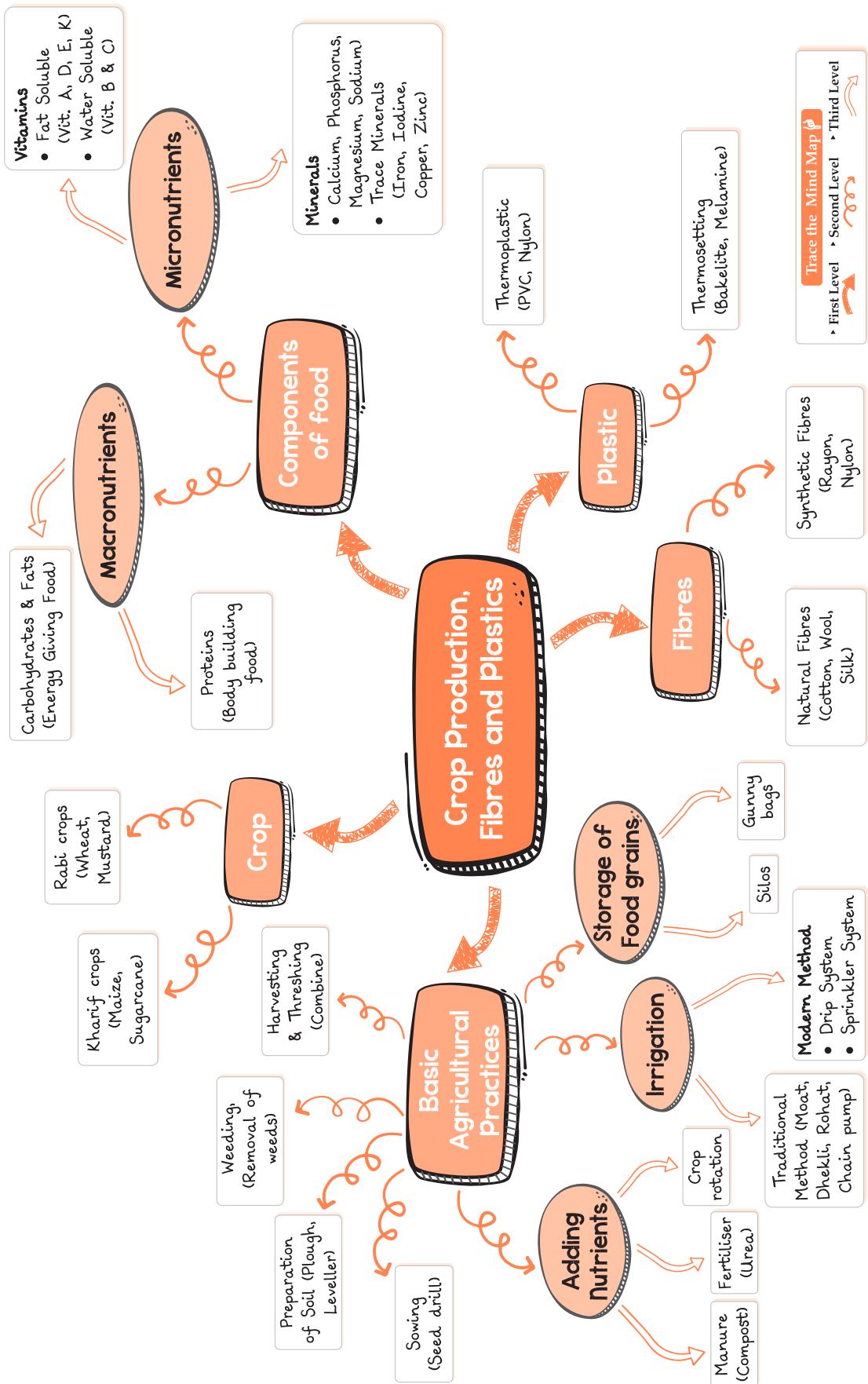
★ The food we eat is composed of macronutrients like carbohydrates, proteins and fats and some micronutrients like vitamins and minerals.

1. **CARBOHYDRATES:** Carbohydrates are a class of organic molecules containing carbon, oxygen and hydrogen.



## DID YOU KNOW?

Lemons are the nutritious choice, rich in vitamin C, which helps boost the immune system. They also support the body's natural detoxification process. Adding lemon to a mug of warm water can be a refreshing and healthy way to start your day.





The sources of carbohydrates are rice, potato, sugar, sweet potatoes, wheat, etc. They give energy to the body. One gram of carbohydrate provides 4 calories of energy.

Carbohydrates are classified into monosaccharides, disaccharides and polysaccharides. Saccharides mean sugar. Glucose is a monosaccharide, sucrose is a disaccharide and starch is a polysaccharide.

2. **PROTEINS:** These are the compounds formed by basic monomer units, i.e., amino acids, which help in the growth of the body. There are a total of 20 amino acids.

Sources of proteins are soyabean, pulses, eggs, meat, fish, etc. One gram protein provides 4.2 calories of energy.

3. **FATS:** Fats are a type of lipid. They are composed of glycerol and fatty acids, provide structure, insulation and energy to the body. Vegetable oils, nuts, dairy products, etc. are good sources of fat. One gram fat provides 9.3 calories of energy.

4. **VITAMINS:** Vitamins are essential for normal growth and proper functioning of the organ systems of our body. It also provide resistance to the body against diseases but does not provide any energy.

They are classified on the basis of how they dissolve in our body. Water-soluble vitamins (vitamins B and C) dissolve in water, while fat-soluble vitamins (vitamins A, D, E and K) dissolve in fat. Both types of vitamins are equally important for our body.

Sources of vitamins include fruits, vegetables, whole grains, dairy products, etc.

5. **MINERALS:** Minerals are inorganic substances required by the human body to function properly. The human body requires varying amounts of minerals daily in order to build strong bones and muscles. For example, calcium and phosphorus help in bone formation, haemoglobin is made up of iron. Macro elements are nutrients that the body needs in large amounts (such as calcium, phosphorus, potassium, etc.) , while micro elements (such as iron, zinc, cobalt, etc.) are nutrients that the body needs in small amounts.



## Mnemonics

**Concept:** Components of Food

**Mnemonics:** Full Course Problem For Vast Mind

**Interpretation:**

F = Food

C = Carbohydrate

P = Protein

F = Fat

V = Vitamin

M = Mineral



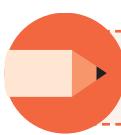
### AMAZING FACTS

Our hair, nails, blood, skin and bones are made up of proteins.



### DID YOU KNOW?

- The exploration and naming of vitamins began significantly in the early 20<sup>th</sup> century. The first vitamin to be chemically identified was Vitamin A in 1913. The discovery of essential vitamins continued over the years, with folic acid being one of the last to be clearly identified and named in 1941. This period of intense research helped establish the foundation for modern nutritional science.
- To absorb calcium, your body needs enough Vitamin D.
- Casimir Funk, a biochemist, coined the term "vitamin" in 1912.



## Crops and Basic Agricultural Practices

- ★ Similar types of plants grown on a large scale in an area are called crops. For example, all the plants of wheat grown in a field are called wheat crops. Similarly, all the plants of pulses grown in a field are called pulse crops.

### Types of Crops

- ★ On the basis of seasons, all crops are categorised into two main groups:

- (a) **Kharif crops:** They are also known as monsoon crops, as they are sown in June or July and harvested in September and October. Examples include: maize, sugarcane, soyabean, groundnut and paddy.
- (b) **Rabi crops:** They are also known as winter crops as they are sown in mid-November and harvested in April or May. Examples include : wheat, mustard, peas and barley.

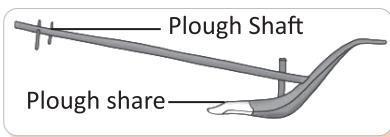
**Agriculture:** The growing of crops in fields by the farmer for obtaining food items such as wheat, rice, maize, etc. is called agriculture.

## Basic Agricultural Practices

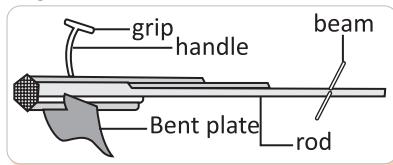
- ★ The basic activities done by farmers in the crop field to raise a particular crop are called agricultural practices. Crop production involves various agricultural practices such as:

1. **Preparation of soil:** Soil preparation is the first step to be followed before growing a crop. It is usually employed to loosen the soil. It is important to prepare soil for a healthy production, so that plants can easily absorb water, nutrients and minerals from the soil. The soil is prepared for sowing seeds by ploughing, levelling and manuring.

(a) **Ploughing:** It is the process of loosening and turning the soil. In this process, a properly set plough breaks and turns the soil so that all the weeds, grass, crop residues and debris can be buried without any scrap of waste present in the field. Tools used for ploughing are plough, hoe and cultivator (which is engine driven).



**Plough**



**Hoe**

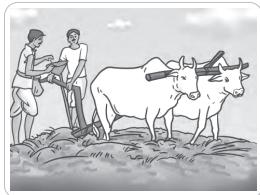


**Cultivator**

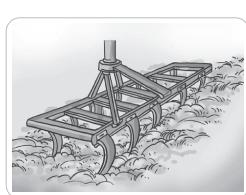
- (b) **Levelling:** The ploughed soil is quite loose, so it is liable to be carried away by strong winds or washed away by rainwater. Hence, after ploughing, the field is levelled with the help of a leveller.
2. **Sowing:** It is a process of placing seeds in the soil. However, the seeds selected for growing should be of good quality. The tools used for sowing seeds include: traditional tool and modern equipments such as seed drill.

(a) **Traditional tool:** This tool is funnel shaped. The seeds are filled into the funnel that has a long pipe with sharp ends. The seeds from the funnel move into the pipe placed into the soil as plough moves.

(b) **Seed drill:** This is the modern tool, used for sowing seeds. It involves the use of tractors. Seed drills sow the seeds uniformly at proper distances and depths.



**Traditional tool**



**Seed drill**

3. **Adding manure and fertilisers:** The substances which are added to the soil in the form of nutrients for the healthy growth of plants are called manure and fertilisers.
- (a) **Manure:** Manure is an organic substance obtained from the decomposition of plant or animal wastes. It provides a lot of organic matter like humus to the soil. Examples include plant waste, animal excreta, sewage waste, etc.
- (b) **Fertilisers:** Fertilisers are commercially available plant nutrients. They can be organic or inorganic in nature. Examples include urea, sodium nitrates, ammonium sulphate, etc.
- (c) **Crop Rotation:** It is another method to improve the fertility of soil. Crop rotation is the practice of growing two or more varieties of crops on the same land in sequential seasons. In crop rotation, the cereal crops like wheat, maize, etc. are grown alternately with leguminous crops like pulses, beans, peas, etc.
4. **Irrigation:** The process of supplying water to the crops in the fields is called irrigation.

### DID YOU KNOW?

China is a leading global producer and consumer of food, particularly rice and pork, and a major importer of soybeans. India is one of the top global producers, especially of rice and wheat, which are crucial for both domestic and international markets.



### DID YOU KNOW?

Earthworms are called the best friends of farmers. They convert the dead organic matter into rich humus, thereby enriching the soil with nutrients.



### DID YOU KNOW?

- Earthworms are called the best friends of farmers. They convert the dead organic matter into rich humus, thereby enriching the soil with nutrients.
- Vermicomposting is the process of composting organic wastes with the help of earthworms.



The time and frequency of irrigation vary according to different seasons, crops and soil types. HYV(High Yield Verity) seeds usually need more irrigation compared to others.

Crops can be irrigated by using either traditional or modern methods.

**(i) Traditional methods:**

- (a) • Moat, which is based on pulley system.



**Moat**

- (c) • Dhekli is a traditional irrigation method using a lever system.



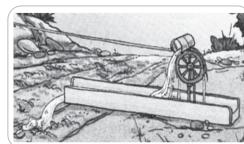
**Dhekli**

- (b) • Rahat, which is based on lever system.



**Rahat**

- (d) • Chain pump, which is based on pumps



**Chain pump**

Scan to know more about this topic



Traditional methods of Irrigation

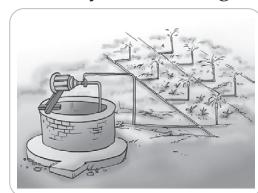
**(ii) Modern methods:**

- (a) **Drip system:** This method of irrigation is more efficient for irrigating fruits and vegetables. This method reduces wastage of water, as water directly seeps into the roots.



**Drip system**

- (b) **Sprinkler system:** This system of irrigation supplies water to plants (crops) in the form of rain.



**Sprinkler system**



**Spraying weedicides**

5. **Weeding:** The process of removing weeds from the cultivated field is called weeding. Weeds are undesirable plants that grow along with crops. Some examples of weeds are wild oat, grass, *Amaranthus*, *Xanthium*, *Parthenium*, etc.
6. **Harvesting:** It is the final step in crop production, involving the cutting and gathering of the mature crops. Grains are harvested manually using a sickle. In large fields, the crops are harvested using a machine called harvester.
7. **Threshing:** After harvesting, the next step is threshing. Threshing is the process of separating the grain seeds from the chaff. It is a slow and time consuming process, if it occurs manually. Hence, it is carried out with a machine called "Combine." Combine is actually a machine that performs both harvesting and threshing.
8. **Winnowing:** After grains are threshed, the chaff is removed from the grains. This process is known as winnowing. Hence, winnowing is the process of separating grains from the mixture of threshed chaff.
9. **Storage of food grains:** This is the most important agricultural activity. Crops are dried in the sunlight before storage to reduce the moisture content of the grains and to prevent their spoilage during storage.
  - The farmers store the dried grains in metal bins and jute bags.
  - The government agencies like FCI (Food Corporation of India) buy grains from farmers and store it in big godowns. It is done so that it can be supplied throughout the country, round the year to control food prices and food scarcity.



**AMAZING FACTS**

India is the largest milk producer, ranks 2<sup>nd</sup> in vegetables and fruits, 3<sup>rd</sup> in fish, egg and poultry production in the world.

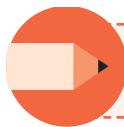
- The large scale storage of food grains is done in gunny bags and in grain silos.



Storage

## Animal Husbandry

- Animal husbandry is the practice of feeding, breeding and raising the livestock on large scale. It includes animals like cattle, goat, sheep, poultry, pig and fish.



## Synthetic fibres and Plastics

- Materials that cover our body and protect us from heat, cold and other weather conditions are known as clothes. Different types of clothes are made up from various fabrics, animal skin, or other natural materials.

- There are two types of fibres:**

- NATURAL FIBRE:** The fibres which are obtained from plants and animals are called natural fibre. Examples include: Wool, cotton, silk, etc.
  - The wool is obtained from the skin of sheep and yak.
  - Cotton is obtained from the hair borne on the seeds or inner walls of fruits of the cotton plant.
  - Silk is obtained from the silk moth (*Bombyx mori*). The rearing of silk moth for the production of silk is called sericulture.
  - Jute is a fibre obtained from the stem of a jute plant. It is a long, shiny bast fibre that can be spun into strong threads. Jute readily absorbs water readily and dries quickly.

- Advantages of natural fibres:**

- These fibres are biodegradable and are easily available.
- These fibres are cheap and are lightweight.
- These fibres are comfortable and sustainable.

- Disadvantages of natural fibres:**

- Some of the natural fibres like silk are expensive and delicate. Their strength is very less as compared to synthetic fibres.
- These fibres are not long-lasting and are less durable.
- Natural fibres can be heavier in weight.

- SYNTHETIC FIBRES:** These are man-made fibres obtained by chemical processing of petrochemicals. Synthetic fibres can be woven into a fabric, just like natural fibres. They are made up of chains of small units joined together to form a large single unit called a polymer. Examples of some synthetic fibres are rayon, nylon, polyester, acrylic, etc.



### DID YOU KNOW?

- Bamboo can be used to make yarns, threads and linen like fabric. Both bamboo and hemp have anti-bacterial properties.
- Silkworms weave themselves a covering called cocoon to protect themselves while they transform into adults.
- Cotton can absorb water up to 24-27 times its own weight. Also, wet cotton fibre is 20-25% stronger than dry cotton fibre.



### Mnemonics

**Concept:** Examples of Natural Fibre

**Mnemonic:** Not For Sale Cost Wide

**Interpretation:**

N = Natural, F = Fibre, S = Silk,  
C = Cotton, W = Wool



**(a) Nylon:** These fibres are highly lustrous, soluble in hydrochloric acid and can be dried easily. It is made up of polyamides obtained from petroleum products. It has high strength and is resistant to abrasion. It is used to make garments, swimwear, fishnets and also as plastic in machine parts. Nylon is also used for making parachutes and ropes for rock climbing, as a nylon wire is stronger than steel wire of the same dimension.



Scan to know more about this topic

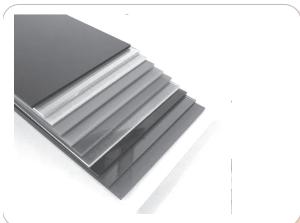


Synthetic Fibres

**(b) Rayon:** It is a man-made fibre manufactured from wood pulp, which is made up of cellulose. As it is prepared by the chemical treatment of cellulose obtained from plants, it is considered a semi-synthetic fibre. It is lustrous and used for making bandages, surgical dressings, etc. Rayon when mixed with wool forms carpets.



**(c) Acrylic:** Acrylic is a synthetic fibre, that resembles wool. This fabric is considered as fossil fuel-based fibre and is produced by reacting to a variety of monomers with specific coal or petroleum-based chemicals. It is used for making jackets, athletic wear, hoodies, etc. It can be washed quite easily. It has a wool like texture and does not wrinkle easily.



**(d) Polyester:** These are the polymers of ester ( $-COO$ ) groups derived from petroleum. It repels water and has a good resistance to heat. These fibres are used to make fabrics, bottles, films, holograms, insulating tapes, etc.



#### ★ Advantages of synthetic fibres:

- (a) These are strong, durable and can be stretched easily.
- (b) They are cheaper than natural fibres.

#### ★ Disadvantages of synthetic fibre:

- (a) These fibres catch fire easily.
- (b) These fibres are hydrophobic. They do not absorb moisture.
- (c) These are non-biodegradable.

## PLASTICS

- ★ Plastic is one of the most important things of our life. We can see lots of things made up of plastics everywhere. From food packaging to medical equipments, plastic is being used in every aspect of our lives.



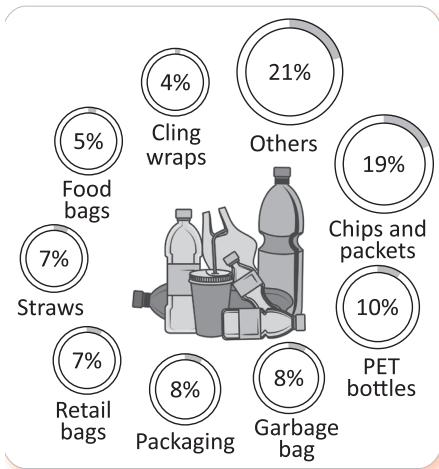
## Mnemonics

**Concept:** Examples of synthetic fibre

**Mnemonics:** Sorry For Not Reaching Accurate Place

**Interpretation:**

S = Synthetic  
F = Fibre  
N = Nylon  
R = Rayon  
A = Acrylic  
P = Polyester



### DID YOU KNOW?

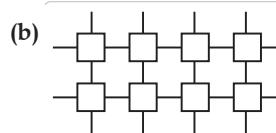
Bakelite was the first fully synthetic plastic, invented in 1907 by Belgian-born American chemist Leo Baekeland. Around 50% of the plastic that people use is used only once then thrown away as waste.

### Uses of plastic

- ★ Plastic is a synthetic material that can be moulded or shaped into desired form when soft and then hardened to produce a durable article. Plastics are polymer-like synthetic fibres made up of large, carbon-containing molecules that give them many of their useful properties. All plastics do not have the same type of arrangement of units. In some, the structure is linear, whereas in others it is cross-linked. Note that linear (thermoplastic) plastics are more easily recyclable than cross-linked (thermosetting) plastics because their structure allows them to be melted and reshaped multiple times.



Linear arrangement



Cross-linked arrangements

- ★ Polythene, Polyvinyl chloride, Bakelite, Melamine, Teflon, etc. are some examples of plastics.
  - (a) **Polythene:** It is a plastic obtained by the polymerisation of a chemical compound known as ethene. It is tough and durable. It is used in making polythene bags, waterproof plastic sheets, bottles, buckets, dustbins, etc.
  - (b) **Polyvinyl chloride:** It is a strong and hard plastic. It is not as flexible as polythene. It is used for making insulation for electric wires, pipes, garden hoses, raincoats, seat covers, etc.
  - (c) **Bakelite:** It is a very hard and tough plastic. It is a poor conductor of heat and electricity.
  - (d) **Melamine:** It is a plastic which can tolerate heat better than other plastics and resist fire. It is used for making floor tiles, unbreakable kitchenware, ashtrays and fire-resistant fabric.

### Types of Plastics

- ★ Depending on physical properties, plastics are divided into two types:
  - (a) **Thermoplastic:** These plastics can be heated and shaped repeatedly. Examples include: PVC, nylon, polythene, etc. They are used for making insulations of electric wires and cables, various types of plastic containers, combs, toys, raincoats, seat covers, bristles of brushes, chains, etc
  - (b) **Thermosetting:** Once set, these plastics cannot be remelted. Examples include bakelite, melamine, etc.

#### Biodegradable and non-biodegradable materials:

- **Biodegradable material:** A material which gets decomposed through natural processes, such as action of bacteria or other microorganisms is called biodegradable material. They rot away with time and hence, do not cause pollution in the environment. For example, plant waste, animal waste, paper, cotton, cloth, wool, jute, wood, etc.
- **Non-biodegradable material:** A material which is not easily decomposed by natural processes is termed as non-biodegradable material. It does not rot away over time and hence, causes pollution in the environment. For example, plastic bags and bottles, metals like aluminum cans, and glass.

#### Plastics and the environment:

- Waste created by plastics is not eco-friendly. The burning of plastic releases poisonous gases. Hence, these should not be disposed by burning.



### AMAZING FACTS

A single plastic bag can take up to 500 years or more to degrade.



- They are non-biodegradable, and they do not get decomposed by the microbial action.
- Polybags carelessly thrown are responsible for clogging the drains and also cause health problems for animals. Since, cows and other stray animals sometimes swallow plastic bags that choke their respiratory systems.

**Measures to control the damage caused by plastics:** Be a responsible citizen and follow the 5R principles— 5R principles Reduce, Reuse, Refuse, Repurpose and Recycle to minimise the pollution which occurs due to the non-biodegradable materials like plastics.

- We should reduce the use of plastic articles by using articles made of other suitable materials.
- We should reuse plastic articles wherever possible.
- We should recycle old and discarded plastic articles, if possible.
- We should avoid or refuse to purchase items that are meant for single use.
- We should try to transform discarded materials into new products or applications for new products, wherever it is possible.



### DID YOU KNOW?

We use 5 trillion plastic bags annually, which is 160,000 every second! That's over 700 bags per person each year worldwide.



## Competency Focused Questions

- If a farmer uses too much urea in the field, what is most likely to happen?
  - Crop growth improves steadily
  - Soil becomes infertile over time
  - Soil becomes more organic
  - Microbes increase in number
- Look at the image of the farmer scattering seeds.



This method is generally followed for crops like wheat and rice. What is this traditional practice of sowing seeds called?

- Transplantation
  - Irrigation
  - Broadcasting
  - Drilling
- Match the item in Column I with its primary material property in Column II.

Column I (Real-Life Item)	Column II (Material Property)
S. Rayon Garment	4. Absorbs moisture like natural cotton

- (a) P-2, Q-3, R-1, S-4  
(b) P-3, Q-2, R-4, S-1  
(c) P-2, Q-1, R-3, S-4  
(d) P-4, Q-3, R-1, S-2
- The image shows an eco-friendly waste disposal method.



What type of fertiliser is produced here?

- Chemical fertiliser
  - Organic manure
  - Compost
  - Bio-fertiliser
- A customer notices that a jacket labelled as "100% Polyester" is available at a lower price than a jacket labelled "100% Cotton" as shown in image below.



Which of the following is the most likely

Column I (Real-Life Item)	Column II (Material Property)
P. Parachute Fabric	1. Good for making non-stick cookware
Q. Melamine Dishware	2. High tensile strength and elasticity
R. Teflon Coating	3. Fire-resistant and can tolerate heat better

- disadvantage of choosing the polyester jacket?
- It will shrink significantly after the first wash.
  - It will be very heavy and difficult to maintain.
  - It will get easily infested by moths and other insects.
  - It will not absorb sweat as effectively and may feel sticky in hot and humid weather.
6. A farmer notices that his standing wheat crop (Rabi crop) is frequently being damaged by a large number of rodents (rats and mice) as shown in image below.



- Which of the following **Integrated Pest Management (IPM)** strategies, which focuses on sustainable and balanced control, would be the most suitable and environmentally sounds initial approach?
- Immediately spray the entire field with a broad-spectrum chemical rodenticide (rat poison).
  - Clear the field boundaries of tall grass and weeds to destroy the rodents' habitats and shelters.
  - Introduce a natural predator, such as a large number of barn owls, to the area.
  - Store the harvested grain in sacks soaked in insecticide to prevent damage during storage.
7. Look at the image of irrigation method in arid field.



- If this system is used in a grape orchard, how does it affect yield quality?
- Reduces sugar content in grapes
  - Improves water use efficiency and maintains fruit quality
  - Wastes more water due to continuous dripping
  - Causes salinity in soil
8. You are asked to design a raincoat that is light, flexible, and waterproof but not harmful to the environment.
- Which material combination would be most appropriate?
- Pure PVC plastic
  - Polythene sheets
  - Coated natural fabric with biodegradable polymer

- (d) Nylon with metal coating
9. A tailor is trying to identify two different fabric scraps, A and B, using a simple burning test.



He observes the following results:

Fabric Scraps	Observation upon Burning
Fabric A	Burns readily with a yellow flame, smells like <b>burning paper</b> and leaves a small amount of soft, grey ash.
Fabric B	Burns slowly, melts/shrivels away from the flame, smells like <b>burning plastic/chemicals</b> and leaves a hard, black bead.

Based on the Class 8 classification of fibres, which of the following is the most likely combination for Fabric A and Fabric B?

- A is Rayon, B is Cotton.
- A is Cotton, B is Polyester.
- A is Nylon, B is Wool.
- A is Acrylic, B is Silk.

10. **Scenario:** A large amount of discarded waste is shown. Item P is a simple, thin plastic carry bag, while Item Q is a thick, rigid insulation foam (like the one used in refrigerators).

Item P	Item Q
<b>Image P:</b> A discarded Plastic Carry Bag (made of low-density polyethylene, LDPE).	<b>Image Q:</b> A piece of thick, discarded Styrofoam/Insulation Foam (made of polystyrene, a thermoplastic).



A student argues that Item P poses a greater immediate threat to marine life, while Item Q poses a greater long-term threat in landfills due to leaching chemicals. Which statement is the most accurate assessment of the overall environmental risk of these two common plastic items?

- Both P and Q are classified as thermosetting plastics, which makes them both equally hazardous to recycle.
- Item Q biodegrades faster than Item P due to its porous structure.



- (c) Both P and Q are non-biodegradable and break down into persistent microplastics, but Item P's lightweight nature makes it much more mobile and dangerous in waterways.



## PYQs Marathon

### LEVEL 1

1. Refer to the given table and select the option that correctly identifies P, Q, R and S. [2025]

	Steps of agriculture	Implements
(i)	Tilling	P
(ii)	Q	Seed drill
(iii)	R	Trowel
(iv)	Harvesting	S

P      Q      R      S

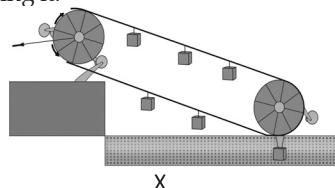
- (a) Plough      Threshing      Levelling      Combine  
 (b) Hoe      Sowing      Weeding      Sickle  
 (c) Combine      Sowing      Manuring      Hoe  
 (d) Cultivator      Manuring      Levelling      Harvester

2. Read the given statements and select the option that correctly identifies them as true (T) and false (F) ones. [2025]

- (i) Water logging increases the amount of salts in the soil that reduces soil fertility.  
 (ii) Sweet potato is a tuber crop while tapioca is a root crop.  
 (iii) Paddy and pea are examples of kharif crops.  
 (iv) Simazine, dalapon and butachlor are examples of weedicides.

- |       |      |       |      |
|-------|------|-------|------|
| (i)   | (ii) | (iii) | (iv) |
| (a) F | T    | T     | T    |
| (b) T | F    | T     | F    |
| (c) F | T    | F     | F    |
| (d) T | F    | F     | T    |

3. Identify the method of irrigation shown in the given figure X and select the correct statement regarding it. [2025]



X

- (a) It is based on pumps.  
 (b) This method of microirrigation is used to deliver water directly at the base of each plant.  
 (c) It is a modern method of irrigation.  
 (d) None of the above
4. Identify the method of irrigation shown in the given figure and select the correct statement regarding it. [2024]

- (d) Item P will decompose quickly, if exposed to sunlight, unlike Item Q which is completely inert.



- (a) It is a modern method of irrigating the crop fields.  
 (b) It is based on lever system.  
 (c) By this method of irrigation water is delivered drop by drop at the base of each plant.  
 (d) This modern method of irrigation is used only in areas where the soil is sandy

5. X is a kharif crop whereas Y is a rabi crop. Select the option that correctly identifies X and Y.

[2024]

- |               |         |
|---------------|---------|
| X             | Y       |
| (a) Cotton    | Mustard |
| (b) Groundnut | Maize   |
| (c) Pea       | Gram    |
| (d) Wheat     | Paddy   |

6. Identify the agricultural implement shown in the given figure and select the correct statement regarding it. [2024]



The given agricultural implement is used to

- (a) Level the crop field for uniform distribution of water.  
 (b) Remove the weeds manually.  
 (c) Sow the seeds at proper distances.  
 (d) Separate the grains from the chaff.

7. The crops grown in the rainy season are known as

[2024]

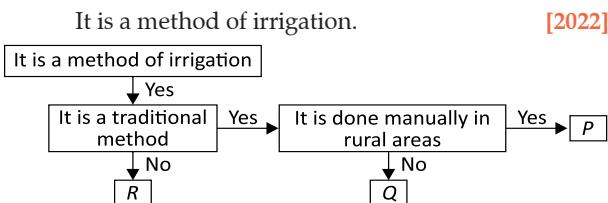
- |          |            |
|----------|------------|
| (a) Rabi | (b) Kharif |
| (c) Cash | (d) Fibre  |

8. The months in which rabi crops are grown: [2024]  
 (a) July to December    (b) October to March  
 (c) June to September    (d) April to May

9. Which of the following does not classify as a thermoplastic? [2024]

- |                  |                        |
|------------------|------------------------|
| (a) Polystyrene  | (b) Polyvinyl chloride |
| (c) Polyurethane | (d) Melamine           |

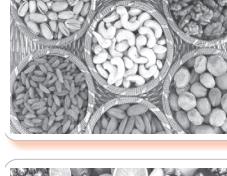
10. State True or false:

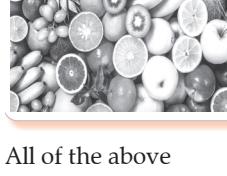


- (a) P could be moat whereas R could be rahat.  
(b) P could be dhekli whereas R could be drip irrigation.  
(c) Q could be dhekli whereas R could be chain pump.  
(d) Q could be sprinkler irrigation whereas R could be dhekli.

16. The food material which provides fibre to the body is:

(a) 

(b) 

(c) 

(d) All of the above

17. X is a thermoplastic which is used to make soles of shoes while Y is a thermosetting plastic which is used for making electrical switches and plugs. X and Y are respectively. [2022]

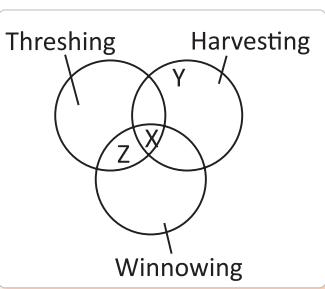
(a) PVC and bakelite  
(b) Polythene and PVC  
(c) Melamine and bakelite  
(d) Melamine and PVC.

18. Identify the given agricultural implement and select the correct statement regarding it.



- (a) It is used to remove unwanted plants that grow along with crops.



	X	Y	Z
(a)	Combine	Thresher	Sickle
(b)	Combine	Sickle	Thresher
(c)	Harvester	Sickle	Trowel
(d)	Sickle	Trowel	Harrow

22. The scientific name of silk moth is: [2021]  
(a) *Apis indica*      (b) *Bombyx mori*  
(c) *Periplaneta*      (d) *Rana tigrina*

23. Which among the following is a natural fibre?  
(a) Silk      (b) Nylon  
(c) Rayon      (d) Acrylic [2020]

24. Match column I with column II and choose the correct option. [2018]

<b>Column I</b>	<b>Column II</b>
I. Nylon	(i) Burns quickly with a smell of burning paper.
II. Wool	(ii) Burns with sooty flame, fabric shrinks and black beads are formed.

III. Acrylic	(iii) Shrinks after exposure to flame, forms hard beads and gives a smell of burning hair.
IV. Rayon	(iv) Burns slowly with a smell of burning hair.

- 25.** Given are some properties about acrylic fibre. Choose the property that is not related to acrylic.

  - (a) I-(i), II-(iv), III-(ii), IV-(iii)
  - (b) I-(iii), II-(iv), III-(ii), IV-(i)
  - (c) I-(iv), II-(iii), III-(i), IV-(ii)
  - (d) I-(ii), II-(iv), III-(iii), IV-(i)

LEVEL 2

- 1.** X is a synthetic fibre obtained from a natural polymer, cellulose. It is not silk but shines like silk. One of its uses is shown in the picture. So, X is





3. Read the given list of few methods of irrigation.

[2021]

(i) Moat	(ii) Sprinkler system
(iii) Dekhli	(iv) Chain pump
(v) Drip system	(vi) Rahat

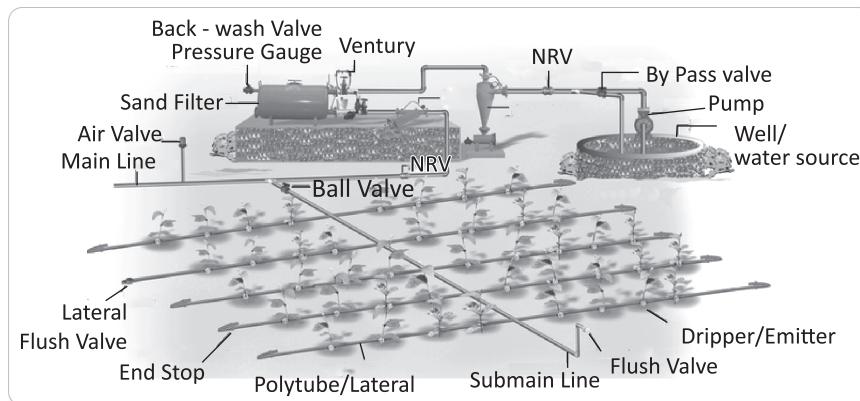
How many of these are traditional methods (p) and modern methods (q) of irrigation?

P	q
(a) 3	3
(b) 4	2
(c) 5	1
(d) 2	4

4. Which of the following is not an advantage of using manure over fertiliser? [2021]
- (a) It is rich in inorganic nutrients, i.e., nitrogen, phosphorus and potassium.
  - (b) It enhances water holding capacity of the soil.
  - (c) It replenishes the soil nutrients and also restores its texture.
  - (d) It makes the soil porous due to which exchange of gases become easy.
5. Which of the following methods of irrigation and crop cultivation is wrongly matched? [2013]

	Irrigation	Crops
(i)	Sprinkler	Coffee

7. Which of the following is correct regarding this irrigation method? [2013]



- (a) It is the best technique for watering fruit plants, gardens and trees.
  - (b) It is a boon in regions where availability of water is poor.
  - (c) The method provides water to the plants drop by drop at their roots.
  - (d) All of the above
8. Match the articles given in Column I with the fibres / plastics from which they are made in Column II. [2013]

Column I	Column II
(A) Tooth brush bristles	(i) Melamine
(B) Carpet	(ii) PVC
(C) Bottle	(iii) Nylon
(D) Toy	(iv) Rayon
(E) Fire resistant fabric	(v) PET

- (a) (A)-(i), (B)-(iv), (C)-(ii), (D)-(v), (E)-(iii)
- (b) (A)-(iv), (B)-(ii), (C)-(iii), (D)-(i), (E)-(v)
- (c) (A)-(iii), (B)-(iv), (C)-(v), (D)-(ii), (E)-(i)
- (d) (A)-(iii), (B)-(v), (C)-(iv), (D)-(i), (E)-(ii)

(ii)	Drip system	Paddy
(iii)	Furrow system	Vegetables
(iv)	Basin system	Fruits

Choose the correct option.

- (a) ii & iii
  - (b) ii & iv
  - (c) iii & iv
  - (d) i & iv
6. Which of the following about rayon is/are false? [2013]

- (i) It is quite suitable for making dress.
- (ii) It is used to make the sweaters and blankets.
- (iii) It is obtained from the wood pulp.
- (iv) It is lustrous and easy to wash.
- (v) It is mixed with wool to make the carpets.

Choose the correct option.

- (a) (i), (ii) and (iii) only
- (b) (ii) only
- (c) (i), (ii) and (iv) only
- (d) (iii) and (v) only

9. Arrange the given tools in a proper order according to their purpose for an agricultural activity. [2013]

- (i) Seed drill
  - (ii) Leveler
  - (iii) Hoe
  - (iv) Plough
- (a) (i), (ii), (iii) and (iv)
  - (b) (iii), (iv), (i) and (ii)
  - (c) (iii), (ii), (i) and (iv)
  - (d) (iv), (ii), (i) and (iii)

10. Choose the option by matching the following plastic materials with its application – [2013]

List 1 – Plastic products	List 2 – Application
(i) Melamine	1. Toys & Container
(ii) PVC	2. Electrical switches
(iii) Teflon	3. Floor tiles
(iv) Bakelite	4. Non-stick coating

- (a) 2, 4, 2, 1
- (b) 3, 1, 4, 2
- (c) 3, 2, 4, 1
- (d) 2, 4, 1, 3

11. In an activity, Priyal took pre-weighed pieces of cloth of nylon, cotton, silk and wool of equal



measurements and soaked them in a beaker filled with water. After a few minutes, the cloth pieces were taken out of the beaker and weighed again. Which of the following options, places them in the correct order of their final weights?

- (a) Wool > Silk > Nylon > Cotton
- (b) Cotton > Silk > Nylon > Wool
- (c) Silk > Wool > Cotton > Nylon
- (d) Wool > Cotton > Silk > Nylon

**12.** Mohini's mother advised her not to wear clothes made of synthetic fibres in hot and humid weather. It is because:

- (a) Synthetic fibres catch fire very easily.
- (b) Synthetic fibres do not absorb sweat.
- (c) Synthetic fibres stick to the body.
- (d) Both (b) and (c).

**13.** Study the given information about three different plastics, X, Y and Z.

- X is a thermoplastic which can be rolled into sheets.
- Y is a thermoplastic which can be used as a covering for electric wires.
- Z is a thermosetting plastic, which is used for making plugs and switches.

Identify X, Y and Z.

[2019]

- (a) X – Melamine, Y- Teflon, Z- Bakelite
- (b) X- Bakelite, Y- Melamine, Z- Polythene
- (c) X- Polythene, Y- PVC, Z- Bakelite
- (d) X- PVC, Y- Polythene, Z- Melamine

**14.** A farmer sowed peas and beans in nitrogen deficient soil because:

- I. They absorb most of the nitrogen from the soil.
  - II. They are leguminous plants.
  - III. They have *Rhizobium* in their root nodules, which can fix atmospheric nitrogen.
  - IV. They are green plants.
- [2021]
- (a) I and II only      (b) II and III only
  - (c) I and IV only      (d) All of these

**15.** Find the incorrect match.

- (a) Silk – Agriculture
- (b) Polyester – Ester group
- (c) Wool – Natural fibre
- (d) Rayon – Lustrous

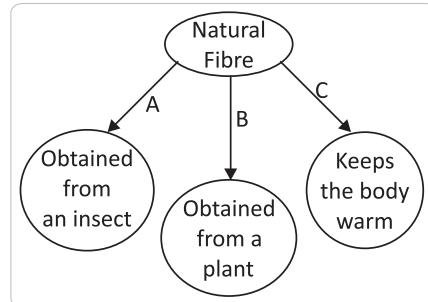
**16.** Which among the following is incorrect about acrylic?

- (a) It resembles wool.
- (b) It is used for making roof windows.
- (c) It is the first synthetic fibre.
- (d) It is used in big aquariums.

**17.** Read the given statements and select the option which correctly identifies True (T) and False (F).

- I. Growing different crops in different seasons in the same field will deplete the nutrients of soil.
  - II. Freshly harvested grains must be dried before sowing.
  - III. Manures are mineral specific as they provide all the minerals needed by plant.
  - IV. Broadcasting of seeds is done by seed drill.
- |          |          |
|----------|----------|
| (a) TFFF | (b) FTFF |
| (c) TTFF | (d) FTFT |

**18.**



Based on given pictorial, select the correct option.

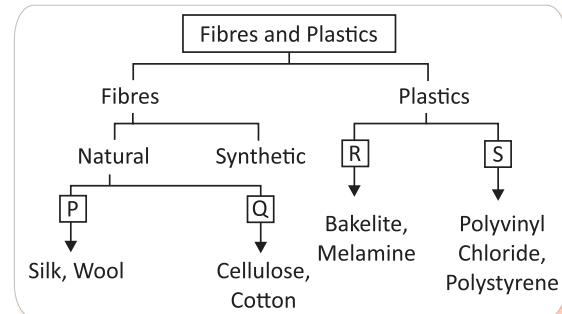
- (a) A = Wool, B = Jute, C = Silk
- (b) A = Jute, B = Silk, C = Wool
- (c) A = Silk, B = Jute, C = Wool
- (d) A = Jute, B = Wool, C = Silk

[2016]

**19.** Select the incorrect statement.

- (a) Most of the plastics are non-biodegradable.
- (b) Synthetic fibres do not melt on heating.
- (c) The first fully synthetic fibre is nylon.
- (d) Polythene and PVC are thermoplastics.

**20.** The given flowchart shows the classification of fibres and plastics. Identify P, Q, R and S.

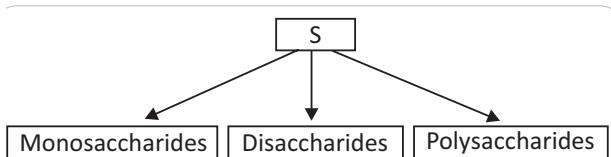


	P	Q	R	S
(a)	Plant fibres	Animal fibres	Thermoplastics	Thermosetting
(b)	Animal fibres	Plant fibres	Thermosetting	Thermoplastic
(c)	Rayon	Animal fibres	Biodegradable	Non-biodegradable
(d)	Animal fibres	Plant fibres	Non-biodegradable	Biodegradable

## **ACHIEVERS SECTION**

- [2022]**

  1. Select the option in which various stages of development of a silk moth have been arranged correctly.
    - (a) Egg – Pupa – Caterpillar – Silk moth
    - (b) Egg – Caterpillar – Pupa – Silk moth
    - (c) Egg – Silk moth – Pupa – Caterpillar
    - (d) Silk – Egg – Caterpillar – Pupa
  2. Rakesh and Shivansh were playing badminton together. Since, the weather was very hot, they were sweating. Rakesh's clothes absorbed the sweat and he was comfortable. However, Shivansh was not comfortable with his clothes. The probable reason could be:
    - (a) Rakesh was wearing nylon shirt and Shivansh was wearing cotton shirt.
    - (b) Rakesh was wearing cotton shirt and Shivansh was wearing nylon shirt.
    - (c) Both Rakesh and Shivansh were wearing cotton shirt.
    - (d) Both Rakesh and Shivansh were wearing nylon shirt.
  3. The given flowchart represents the classification of a type of a food component 'S'. Identify S.



- 4.** Meher grouped few polymers on the basis of some common properties as follows:

Group I: Rayon, Nylon, Jute, Acrylic

Group II: PVC, Melamine, Teflon

Group III: Polycot, terrywool, Acrylic



## Answer-Key

## **COMPETENCY FOCUSED QUESTIONS**

<b>1.</b> (b)	<b>2.</b> (c)	<b>3.</b> (a)	<b>4.</b> (c)	<b>5.</b> (d)
<b>6.</b> (b)	<b>7.</b> (b)	<b>8.</b> (c)	<b>9.</b> (b)	<b>10.</b> (c)

# PYQs MARATHON

## LEVEL 1

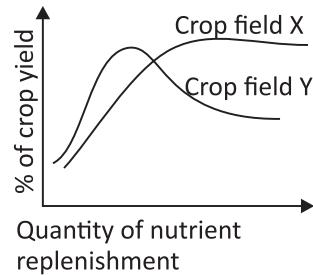
1. (b)      2. (d)      3. (a)      4. (b)      5. (a)

Choose the odd one out in each group.

- (a) I- Rayon, II- Teflon, III- Terrywool
  - (b) I- Nylon, II- Teflon, III- Acrylic
  - (c) I- Jute, II- Melamine, III- Terrywool
  - (d) I- Jute, II- Melamine, III- Acrylic

[2013]

5.



The given graph shows two crop fields (X and Y) that have been treated by different types of materials or nutrients replenishment keeping other environmental factors same. Given are some assumptions regarding the crop fields and the materials used. Select the most correct one: [2013]



6. (b)	7. (b)	8. (b)	9. (d)	10. (a)
11. (c)	12. (b)	13. (a)	14. (a)	15. (b)
16. (d)	17. (a)	18. (b)	19. (b)	20. (a)
21. (b)	22. (a)	23. (b)	24. (d)	25. (c)

LEVEL 2

<b>1.</b> (b)	<b>2.</b> (c)	<b>3.</b> (b)	<b>4.</b> (b)	<b>5.</b> (c)
<b>6.</b> (b)	<b>7.</b> (d)	<b>8.</b> (c)	<b>9.</b> (d)	<b>10.</b> (b)



- |         |         |         |         |         |
|---------|---------|---------|---------|---------|
| 11. (d) | 12. (d) | 13. (c) | 14. (b) | 15. (a) |
| 16. (c) | 17. (b) | 18. (c) | 19. (b) | 20. (b) |

## ACHIEVERS SECTION

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



## Answers with Explanations

### COMPETENCY FOCUSED QUESTIONS

#### 1. Correct option is (b)

**Explanation:** Excess chemical fertilisers like urea destroys soil microorganisms and reduces the soil's natural fertility, making it acidic and hard.

#### 2. Correct option is (c)

**Explanation:** Broadcasting is the manual or mechanical scattering of seeds randomly over a seedbed. This is one of the oldest and simplest methods. While quick, it often results in non-uniform distribution, causing plants to grow too close or too far apart, which can reduce the yield compared to modern methods like drilling.

#### 3. Correct option is (a)

**Explanation:** P - Parachute Fabric is made from Nylon (Synthetic fibre), which is known for its high tensile strength and elasticity (2).

Q - Melamine Dishware uses Melamine (Thermosetting plastic), a fire and heat-resistant material (3).

R - Teflon Coating is Poly-tetra-fluoro-ethylene (PTFE), used as a non-stick coating on cookware (1).

S - Rayon Garment is a semi-synthetic fibre (regenerated cellulose) and is valued because it absorbs sweat/moisture better than true synthetic fibres, much like cotton (4).

#### 4. Correct option is (c)

**Explanation:** Composting is the natural process of recycling organic matter (like kitchen scraps, yard waste, and crop residues) into a rich, dark, and stable soil conditioner. This is achieved by microorganisms (like bacteria and fungi) breaking down the material under controlled aerobic (oxygen-rich) conditions.

#### 5. Correct option is (d)

**Explanation:** Polyester is a synthetic fibre and is inherently **hydrophobic** (water-repelling). While this makes it quick-drying and wrinkle-resistant, it prevents it from absorbing moisture (like sweat) well. In contrast, Cotton (natural fibre) is **hydrophilic** (water-absorbing) and comfortable in summer. Therefore, the polyester jacket will likely feel sticky or clammy when the wearer sweats in hot or humid conditions. (Polyester is generally light, easy to maintain, and insect-resistant, making

the other options incorrect).

#### 6. Correct option is (b)

**Explanation:** The question asks for an **Integrated Pest Management (IPM)** strategy, which prioritizes non-chemical, ecological and sustainable methods first. So, option B is Correct. This is a **cultural control** method within IPM. By removing the weeds and tall grass, the farmer destroys the environment where rodents breed and hide, making the area less hospitable to the pest. This is the simplest, most sustainable and least environmentally damaging first step.

#### 7. Correct option is (b)

**Explanation:** Drip irrigation delivers water directly to roots, preventing water stress and improving fruit size and sweetness — ideal for orchards.

#### 8. Correct option is (c)

**Explanation:** Using biodegradable polymer coatings on natural fabrics provides water resistance while ensuring eco-friendliness — a sustainable innovation.

#### 9. Correct option is (b)

**Explanation:** **Fabric A (Cotton/Rayon):** Natural fibres (like cotton) and semi-synthetic fibres (like rayon, which is cellulose-based) burn similarly to wood or paper because their main component is **cellulose**. They burn easily, smell like burning paper and leave soft ash.

**Fabric B (Polyester/Nylon/Acrylic):** These are petroleum-derived **synthetic fibres**. A key property of synthetics is their tendency to **melt** or shrivel upon heating, which is extremely dangerous as the hot, molten plastic can stick to the skin. They smell chemical and leave a hard bead.

Therefore, the combination **Cotton (A)** and **Polyester (B)** fits the observations perfectly.

#### 10. Correct option is (c)

**Explanation:** Both Item P (thin plastic bag) and Item Q (rigid insulation foam) are non-biodegradable and break down into microplastics. Item P is lightweight and easily carried into waterways, posing an immediate threat to marine life through ingestion or entanglement. Item Q is more stable and less mobile but can leach harmful chemicals in landfills over time, creating a long-term environmental hazard. Thus, P is more dangerous in the short term, while Q impacts the environment in the long term.

## PYQs Marathon

### LEVEL 1

**1. Correct option is (b)**

**Explanation:** Plough, hoe and cultivator are used for tilling the soil. Seed drill is used for sowing seeds. Trowel is used for weeding. Sickle, combine and harvester are used for harvesting.

**2. Correct option is (d)**

**Explanation:** Sweet potato is a root crop while tapioca is a tuber crop. Paddy is a kharif crop while pea is a rabi crop.

**3. Correct option is (a)**

**Explanation:** The method of irrigation shown in the given figure X is chain pump. It is a traditional method of irrigation. Modern methods of irrigation include sprinkler irrigation and drip irrigation. Drip irrigation is a method of micro-irrigation that is used to deliver water directly at the base of each plant.

**4. Correct option is (b)**

**Explanation:** The method of irrigation shown in the given figure is rahat. It is a traditional method of irrigation that is based on lever system. Drip irrigation method is a modern method of irrigation that is used to deliver water drop by drop at the base of each plant and it is used in places where there is shortage of water.

**5. Correct option is (a)**

**Explanation:** Among the given options, cotton, groundnut, maize and paddy are kharif crops while mustard, pea, gram and wheat are rabi crops.

**6. Correct option is (b)**

**Explanation:** The agricultural implement shown in the given figure is a trowel. It is used to remove the weeds manually. A leveller is used to level the crop field for uniform distribution of water. Seed drill is used to sow seeds at proper distances and winnowing machine is used to separate grains from the chaff.

**7. Correct option is (b)**

**Explanation:** The crops grown in the rainy season are called kharif crops, e.g., Maize, jowar, cotton, ragi, etc.

**8. Correct option is (b)**

**Explanation:** The crops grown from October to March month are called rabi crops.

**9. Correct option is (d)**

**Explanation:** Thermoplastic is a type of plastic which on heating can be moulded or reshaped, and solidified on cooling. Polystyrene/poly urethane can be thermoplastic or thermosetting. PVC is thermoplastic. Melamine is thermosetting plastic.

**10. Correct option is (a)**

**Explanation:** A fertiliser provides nutrients

to the crop. A pesticide is required to kill pests. The same kind of plants grown and cultivated on a large scale at a place is called a crop.

**11. Correct option is (c)**

**Explanation:** Teflon is the coating on non-stick pans and bakelite is a substance used to make handles of cookwares.

**12. Correct option is (b)**

**Explanation:** (i) Soybean, (ii)-Rabi, (iii)-Watermelon

**13. Correct option is (a)**

**Explanation:** Agricultural practice in option (a) shows intercropping pattern in which green bean and maize are grown simultaneously in the same field in rows

**14. Correct option is (a)**

**Explanation:** Malathion, disyston, gammexane and BHC are insecticides, while metolachlor, simazine, MCPA, butachlor, 2, 4-D and dalapon are herbicides or weedicides.

**15. Correct option is (b)**

**Explanation:** According to the given flow chart, P could be dhekli, Q could be moat or chain pump and R could be drip irrigation or sprinkler irrigation.

**16. Correct option is (d)**

**Explanation:** The major sources of fiber in a diet are plant-based foods such as whole grains, nuts, seeds, legumes, fruits and vegetables.

**17. Correct option is (a)**

**Explanation:** PVC is a thermoplastic and is used to make shoe soles. Bakelite is a thermosetting plastic and is used for making electrical switches because it is an electrical insulator.

**18. Correct option is (b)**

**Explanation:** The given agricultural implement is seed drill which is used to sow seeds at equal distances and proper depth.

**19. Correct option is (b)**

**Explanation:** Silk is obtained from the cocoons of silkworms. Scientific name of silkworm is *Bombyx mori*.

**20. Correct option is (a)**

**Explanation:** Polyester - Fabrics do not wrinkle easily

Nylon - Used for making parachutes and stockings

Teflon - Used to make non-stick cookwares

Rayon - Used to make carpets and upholstery

**21. Correct option is (b)**

**Explanation:** X is combine. It is designed to perform three operations, i.e., reaping, threshing and winnowing. Y is sickle. It is used for harvesting the crops manually. Z is a thresher. It threshes grain and removes the seeds from the stalks and husks.

**22. Correct option is (a)**

**Explanation:** Natural fibres are obtained from plants and animals. Silk is a natural fibre as it is



obtained from an insect silk moth (*Bombyx mori*). Nylon, rayon and acrylic are synthetic fibres.

**23. Correct option is (b)**

**Explanation:** Nylon shrinks after exposure to flame, forms hard beads and gives a smell of burning hair. Wool burns slowly with a smell of burning hair. Acrylic burns with sooty flame, fabric shrinks and black beads are formed. Rayon burns quickly with a smell of burning paper.

**24. Correct option is (d)**

**Explanation:** Nylon has a high elasticity and a high tensile strength.

**25. Correct option is (c)**

**Explanation:** Acrylic fibre is a synthetic fibre which absorbs less water.

## LEVEL 2

**1. Correct option is (b)**

**Explanation:** Rayon or artificial silk is obtained from a natural source, wood pulp (cellulose), yet it is a man-made polymer. It possesses properties similar to that of silk. It is mixed with cotton to make bedsheets or mixed with wool to make carpets.

**2. Correct option is (c)**

**Explanation:** Polythene - Linear polymer, thermoplastic  
Bakelite - Crosslinked polymer, thermosetting plastic  
Teflon - Linear polymer, thermoplastic  
Polycot - Blended fibre  
PVC - Linear polymer, thermoplastic

**3. Correct option is (b)**

**Explanation:** Traditional methods of irrigation (p) - Moat, Dhekli, Chain pump and Rahat. Modern methods of irrigation (q) - Sprinkler system and Drip system

**4. Correct option is (b)**

**Explanation:** Fertilisers are rich in inorganic nutrients, i.e., nitrogen, phosphorus and potassium.

**5. Correct option is (c)**

**Explanation:** Drip irrigation is the system to water vegetables and fruits because water drips to the roots of the plants. It minimises water loss from run-off and deep percolation, and also decreases evaporation losses.

**6. Correct option is (b)**

**Explanation:** Rayon is not used to make sweaters.

**7. Correct option is (d)**

**Explanation:** Drip irrigation is shown in the picture which is an efficient way to provide water to the plants drop by drop at their roots. It is the best technique for watering fruit plants, gardens and trees and is boon in regions where availability of water is poor.

**8. Correct option is (c)**

**Explanation:** Tooth bristles – Nylon, Carpet – Rayon, Bottle – PET, Toy – PVC, Fire resistant fabric – Melamine.

**9. Correct option is (d)**

**Explanation:** Plough is the most ancient method for ploughing the seed. After ploughing or tilling, the field is levelled with the help of a leveller. Seed drill is the modern tool, used for sowing seeds. It involves the use of tractors. A hoe is used to shape the soil and to control weeds.

Plough → Leveler → See drill → Hoe

**10. Correct option is (b)**

**Explanation:** (i) Melamine – (3) Floor tiles  
(ii) PVC – (1) Toys and containers  
(iii) Teflon – (4) Non-stick coating  
(iv) Bakelite – (2) Electrical switches

**11. Correct option is (d)**

**Explanation:** Higher the water absorption capacity, more will be the final weight. Thus, the correct order of their final weights will be: Wool > Cotton > Silk > Nylon.

**12. Correct option is (d)**

**Explanation:** Clothes made up of synthetic fibres do not absorb water and do not allow the air to pass through. In hot and humid weather, these clothes stick to the body and make us feel uncomfortable.

**13. Correct option is (c)**

**Explanation:** Polythene can be rolled into sheets. PVC is used as a covering for electric wires and bakelite is a thermosetting plastic, which can be used for making plugs and switches.

**14. Correct option is (b)**

**Explanation:** Peas and bean are leguminous plants. They have *Rhizobium* in their root nodules, which have the ability to fix atmospheric nitrogen.

**15. Correct option is (a)**

**Explanation:** The cultivation of silkworms to produce silk is called sericulture.

**16. Correct option is (c)**

**Explanation:** Nylon is the first fully synthetic fibre. In 1931, it was made without using any natural raw material (from plant or animal). It was prepared from coal, water and air.

**17. Correct option is (b)**

**Explanation:** Growing different crops in different seasons in the same field will enrich the nutrients of soil. Broadcasting is the method of sowing seeds in which seeds are scattered in the field by hand or manually. Manures are not mineral specific.

**18. Correct option is (c)**

**Explanation:** Silk is a natural fibre that is produced from the cocoon of the silkworm. Jute fibre is obtained from the stem of the jute plant. Wool primarily comes from sheep. They trap air to keep the body warm.

**19. Correct option is (b)**

**Explanation:** Synthetic fibres are extremely sensitive to heat and have the tendency to melt.

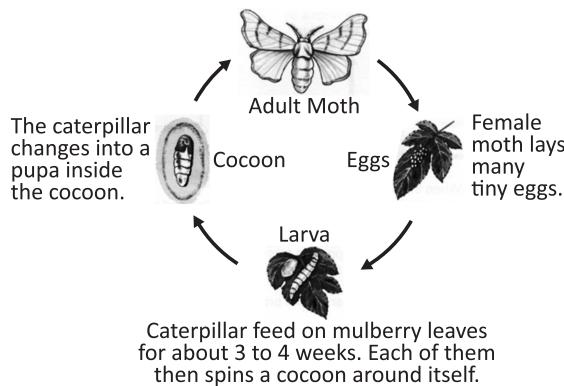
**20. Correct option is (b)**

**Explanation:** Silk and wool are examples of natural animal fibres. Cellulose and cotton are example of natural plant fibres. Bakelite and melamine are thermosetting plastics. PVC and polystyrene are examples of thermoplastic.

### ACHIEVERS SECTION

**1. Correct option is (b)**

**Explanation:** The order of their life cycle is silk moth is Egg → Caterpillar → Pupa → Silk moth.



**2. Correct option is (b)**

**Explanation:** Natural fibres like cotton are good sweat absorbers than synthetic fibres.

**3. Correct option is (c)**

**Explanation:** 'S' is carbohydrate. Carbohydrates are sub divided into three categories –Monosaccharides, disaccharides and polysaccharides.

**4. Correct option is (d)**

**Explanation:** In group I, jute is a natural fibre while others are synthetic. In group II, melamine is a thermosetting polymer while others are thermoplastics. In group III, acrylic is not a blended fibre.

**5. Correct option is (a)**

**Explanation:** Crop field X is treated with manure, crop field Y is treated with fertiliser.

