

**1. (a) Sources of Agricultural Farm Power**

1. **Human Power:** Manual labor for tasks like weeding, planting, and harvesting.
2. **Animal Power:** Using draught animals like cattle and donkeys for ploughing and transportation.
3. **Mechanical Power:** Using engines in tractors, combine harvesters, and irrigation pumps.
4. **Electrical Power:** Powering machines for processing, irrigation, and lighting in farm buildings.
5. **Solar Power:** Used for electric fencing, water pumps, and drying crops.
6. **Wind Power:** Powering windmills to pump water or generate electricity.
7. **Water Power:** Using the flow of water to power mills or generate hydroelectricity for the farm.

**1. (b) Importance of Crop Plants**

1. **Source of Food:** Provides staple foods (cereals, tubers) and nutrients (fruits, vegetables) for human consumption.
2. **Source of Income:** Sale of farm produce generates income for farmers and revenue for the country through exports.
3. **Raw Materials for Industries:** Supplies materials for industries like textiles (cotton), beverages (cocoa), and oils (palm oil).
4. **Employment:** Farming and related industries provide jobs for a large portion of the population.
5. **Animal Feed:** Provides fodder, silage, and grains for feeding livestock.
6. **Medicinal Uses:** Many plants are sources of traditional and modern medicines.
7. **Environmental Protection:** Plants help control soil erosion, act as windbreaks, and improve air quality.

**1. (c) Classification of Crops based on Growth Cycle**

1. **Annuals:** Crops that complete their entire life cycle (from seed to seed) in one year or growing season. Examples: Maize, Rice, Cowpea.
2. **Biennials:** Crops that complete their life cycle in two years; they typically grow vegetatively in the first year and produce flowers and seeds in the second. Examples: Carrot, Cabbage, Onion.
3. **Perennials:** Crops that live for more than two years and can produce flowers and seeds for multiple seasons without being replanted. Examples: Cassava, Mango, Cocoa, Oil Palm.

**1. (d) Classification of Crops based on Uses**

1. **Cereals:** Grown for their edible grains (e.g., Maize, Rice, Sorghum).
2. **Legumes/Pulses:** Grown for their protein-rich seeds in pods (e.g., Cowpea, Groundnut, Soybean).
3. **Root and Tuber Crops:** Grown for their underground storage organs (e.g., Cassava, Yam, Sweet Potato).
4. **Vegetables:** Grown for their edible leaves, stems, or fruits (e.g., Cabbage, Lettuce, Tomato, Okro).
5. **Fruit Crops:** Grown for their sweet, fleshy fruits (e.g., Orange, Mango, Pineapple).
6. **Beverage Crops:** Used to produce drinks (e.g., Cocoa, Coffee, Tea).
7. **Oil Crops:** Grown for their oil-rich seeds or fruits (e.g., Oil Palm, Groundnut, Coconut).
8. **Spices:** Used to flavor food (e.g., Ginger, Pepper).

## 1. (e) Principles of Crop Production

1. **Selection of Suitable Crops:** Choosing crop varieties that are well-adapted to the local climate, soil, and market demand.
2. **Proper Land Preparation:** Preparing a good seedbed that promotes germination and root growth.
3. **Timely Operations:** Carrying out all farm activities like planting, weeding, and harvesting at the optimal time.
4. **Maintaining Soil Fertility:** Using practices like crop rotation, manuring, and appropriate fertilizer application.
5. **Pest and Disease Management:** Implementing effective and integrated strategies to control pests and diseases.

## 2. (a) Farm Mechanization

Farm mechanization is the application and use of machinery and equipment to carry out agricultural operations, replacing human and animal power to improve efficiency, timeliness, and productivity.

## 2. (b) Benefits of Agricultural Mechanization

1. **Increased Productivity:** Allows a farmer to cultivate a larger area of land, leading to higher output.
2. **Timeliness of Operations:** Enables farm tasks like planting and harvesting to be completed quickly at the optimal time.
3. **Reduces Drudgery:** Frees farmers and laborers from difficult and strenuous manual tasks.
4. **Improves Quality of Work:** Machines perform operations like ploughing and seeding with greater precision.
5. **Encourages Commercial Farming:** Makes large-scale, commercially viable agriculture possible.
6. **Reduces Post-Harvest Losses:** Facilitates faster processing and transportation of produce from the farm.

## 2. (c) Limitations of Agricultural Mechanization

1. **High Initial Capital:** The cost of purchasing and maintaining farm machinery is very high.
2. **Small and Fragmented Land Holdings:** Most farms are too small to use large machinery efficiently or economically.
3. **Lack of Technical Skills:** A shortage of trained operators and mechanics to run and repair the equipment.
4. **Unavailability of Spare Parts:** Difficulty in finding and affording spare parts for imported machinery.
5. **Unsuitable Terrain:** Hilly, rocky, or heavily forested land is not suitable for most types of farm machinery.
6. **Poverty and Illiteracy among Farmers:** Many farmers cannot afford the technology or lack the education to adopt it.

## 2. (d) Disadvantages of Farm Mechanization

1. **Unemployment:** It displaces farm laborers who previously performed tasks manually.
2. **Environmental Pollution:** Exhaust fumes from tractors and other machines cause air and noise pollution.
3. **Soil Compaction:** The heavy weight of machinery can compact the soil, leading to poor drainage and root growth.
4. **High Maintenance Cost:** The cost of fuel, lubricants, and repairs can be very high.
5. **Deforestation:** It can encourage the clearing of large forest areas for farming.
6. **Dependence on Foreign Technology:** Many countries depend on imported machinery, which can be expensive and difficult to maintain.

## 2. (e) Contents of a First Aid Box

1. Sterile dressings and bandages
2. Antiseptic wipes and solutions (e.g., iodine, methylated spirit)
3. Painkillers (e.g., paracetamol)
4. Cotton wool and gauze
5. Adhesive tape and plasters
6. Safety pins and scissors
7. Disposable gloves

## 3. (a) Occupational Injuries in Agricultural Production

An occupational injury is any physical harm, wound, or illness that a person sustains as a direct result of carrying out their work or tasks on a farm or in an agricultural setting.

## 3. (b) Types of Injuries in Agricultural Production

1. Cuts and wounds from sharp tools like cutlasses and hoes.
2. Injuries from tractors and other farm machinery accidents.
3. Poisoning from accidental inhalation or contact with agrochemicals like pesticides and herbicides.
4. Bites from snakes, scorpions, or other venomous creatures.
5. Injuries from animal attacks, kicks, or bites.
6. Burns from farm fires or hot engine parts.
7. Sprains and fractures from falls or heavy lifting.

## 3. (c) Poultry House Calculation (Number of Chicks)

**Total Floor Space:**  $10\text{m} \times 6\text{m} = 60\text{ m}^2$

**Number of Chicks:** Total Floor Space / Recommended Space per Chick

**Calculation:**  $60\text{ m}^2 / 0.10\text{ m}^2\text{ per chick} = 600\text{ chicks}$

## 3. (d) Poultry House Calculation (Space per Chick)

**Total Floor Space:**  $12\text{m} \times 8\text{m} = 96\text{ m}^2$

**Recommended Space per Chick:** Total Floor Space / Number of Chicks

**Calculation:**  $96\text{ m}^2 / 1200\text{ chicks} = 0.08\text{ m}^2\text{ per chick}$

### 3. (e) Planting Density

Planting density, also known as plant population, refers to the number of individual plants cultivated per unit of land area (e.g., plants per hectare or plants per square meter). It is a critical factor that affects competition among plants for resources like sunlight, water, and nutrients, and ultimately influences the final crop yield.

### 4. (a) Germination Percentage Measurement

Germination percentage is a test to determine the viability of a batch of seeds. It is calculated by planting a known number of seeds (e.g., 100) under ideal conditions and then counting the number that successfully sprout. The result is expressed as a percentage: **(Number of seeds germinated / Total number of seeds planted) x 100**.

4. (b) **Area** is the amount of space a two-dimensional (flat) surface occupies

### 4. (c) Area of the School Garden

**Area:** Length x Width

**Calculation:** 21m x 19m = 399 m<sup>2</sup>

### 4. (d) Direct Measurement

Direct measurement is the process of determining the value of a physical quantity by using a measuring instrument directly on the object being measured, without the need for complex calculations. For example, using a measuring tape to find the length of a fence or using a scale to find the mass of a bag of fertilizer.

### 4. (e) SI Units Table Completion

Quantity	Unit	Symbol
Amount of substance	mole	mol
Luminous intensity	candela	cd
Electric current	ampere	A
Mass	kilogram	kg
Temperature	kelvin	K