CUET-UG Agriculture Sample Paper - 13

Duration: 1 Hour **Maximum Marks: 250**

Instructions

- This paper contains a total of 50 Multiple Choice Questions.
- Each correct answer carries **+5 marks**.
- Each incorrect answer carries **-1 mark**.
- No negative marking for unattempted questions.

Q1. The term "Genetics" was first coined by which of the following scientists?

(A) Gregor Mendel

(B) William Bateson

(C) Thomas Hunt Morgan

(D) Hugo de Vries

Q2. Which plant growth regulator is primarily responsible for the ripening of fruits?

(A) Auxin

(B) Gibberellic Acid

(C) Ethylene

(D) Abscisic Acid

Q3. The "Bonsai" technique of dwarfing plants originated in which country?

(A) China

(B) Japan

(C) India

(D) Thailand

Q4. What is the average duration of the "Oestrus cycle" in a buffalo?

(A) 18 days

(B) 21 days

(C) 28 days

(D) 31 days

Q5. Which type of soil has the highest water-holding capacity?

(A) Sandy soil

(B) Loamy soil

(C) Clayey soil

(D) Silty soil

Q6. The "Central Rice Research Institute" (CRRI) is located in:

(A) Manila

(B) Cuttack

(C) Hyderabad

(D) New Delhi

Q7. Which of the following is a "Short Day Plant" (SDP)?

(A) Wheat

(B) Rice

(C) Radish

(D) Barley

Q8. The disease "Little Leaf of Brinjal" is caused by:

(A) Bacteria

(B) Virus

(C) Phytoplasma (MLO)

(D) Fungi

Q9. What is the nitrogen percentage in Di-ammonium Phosphate (DAP)?

(A) 18%

(B) 46%

(C) 21%

(D) 32%

Q10. The process of "Retting" is associated with which crop?

(A) Cotton

(B) Jute

(C) Sugarcane

(D) Tobacco

Q11. The scientific name of the "Indian Honey Bee" is:

(A) *Apis mellifera*

(B) *Apis cerana indica*

(C) *Apis dorsata*

(D) *Apis florea*

Q12. Which of the following is a "Primary Tillage" implement?

(A) Harrow

(B) Cultivator

(C) M.B. Plough

(D) Hoe

Q13. The "Fat-soluble" vitamins are:

(A) B and C

(B) A, D, E, and K

(C) A and B

(D) C and D

Q14. Which crop is known as the "Camel of the Desert" due to its drought resistance?

(A) Maize

(B) Sorghum

(C) Pearl Millet

(D) Wheat

Q15. The enzyme "Nitrogenase" contains which of the following elements?

(A) Zinc

(B) Copper

(C) Molybdenum

(D) Magnesium

Q16. "Black Quarter" (BQ) is a serious disease of cattle caused by:

(A) *Bacillus anthracis*

(B) *Clostridium chauvoei*

(C) *Brucella abortus*

(D) *Virus*

Q17. The "National Dairy Development Board" (NDDB) was established in which year?

(A) 1965

(B) 1970

(C) 1955

(D) 1980

Q18. The most common method of propagation in Banana is:

(A) Stem cutting

(B) Grafting

(C) Sword suckers

(D) Seeds

Q19. Which nutrient is responsible for the "Internal Necrosis" of Mango?

(A) Nitrogen

(B) Calcium

(C) Boron

(D) Iron

Q20. The instrument used to measure "Tension" of soil water is:

(A) Piezometer

(B) Tensiometer

(C) Anemometer

(D) Lysimeter

Q21. The process of "Curing" is most important in which crop for flavor development?

(A) Potato

(B) Tobacco

(C) Rice

(D) Wheat

Q22. "Yellow Vein Mosaic" (YVM) is a devastating viral disease of:

(A) Tomato

(B) Okra (Bhindi)

(C) Brinjal

(D) Chilli

Q23. The primary source of energy in a livestock ration is:

(A) Proteins

(B) Carbohydrates

(C) Minerals

(D) Vitamins

Q24. Which type of erosion is known as "Death of Farmer" because it is often unnoticed?

(A) Splash erosion

(B) Sheet erosion

(C) Rill erosion

(D) Gully erosion

Q25. The "Double Cross Hybrid" technique in Maize was given by:

(A) E.M. East

(B) D.F. Jones

(C) G.H. Shull

(D) M.S. Swaminathan

Q26. What is the pH value of a "Neutral" soil?

(A) 5.0

(B) 7.0

(C) 8.5

(D) 9.0

Q27. The first hybrid of Cotton in the world was developed in India. Its name is:

(A) H-4

(B) MCU-5

(C) Varalaxmi

(D) Digvijay

Q28. Which hormone is responsible for "Milk Let-down" in cows?

(A) Progesterone

(B) Estrogen

(C) Oxytocin

(D) Adrenaline

Q29. The storage form of carbohydrate in plants is:

(A) Glycogen

(B) Glucose

(C) Starch

(D) Cellulose

Q30. "Whip tail" disease in Cauliflower is caused by the deficiency of:

(A) Copper

(B) Molybdenum

(C) Zinc

(D) Manganese

Q31. Which irrigation system has the highest "Water Application Efficiency"?

(A) Border irrigation

(B) Furrow irrigation

(C) Sprinkler irrigation

(D) Drip irrigation

Q32. The "Red Color" of Tomato is due to the presence of:

(A) Anthocyanin

(B) Carotene

(C) Lycopene

(D) Xanthophyll

Q33. Which of the following is a "Bio-fertilizer"?

(A) Urea

(B) Azotobacter

(C) Super Phosphate

(D) Potash

Q34. "Foot and Mouth Disease" (FMD) in cattle is caused by:

(A) Bacteria

(B) Virus

(C) Fungi

(D) Protozoa

Q35. The "Gatton" is a variety of which fodder crop?

(A) Berseem

(B) Lucerne

(C) Guinea Grass

(D) Sorghum

Q36. What is the chemical formula of "Gypsum"?

(A) $CaCO_3$

(B) $CaSO_4 \cdot 2H_2O$

(C) $MgSO_4$

(D) $NaCl$

Q37. The study of "Soil" is known as:

(A) Pomology

(B) Pedology

(C) Olericulture

(D) Entomology

Q38. Which part of the "Cinchona" tree yields Quinine?

(A) Leaf

(B) Root

(C) Bark

(D) Flower

Q39. The process of "Pasteurization" of milk involves heating to:

(A) $63°C$ for 30 minutes

(B) $100°C$ for 10 minutes

(C) $80°C$ for 5 minutes

(D) $120^{\circ}C$ for 1 minute

Q40. "Gummosis" is a disease commonly associated with:

(A) Mango

(B) Citrus

(C) Guava

(D) Papaya

Q41. The "Pusa Bold" is an improved variety of:

(A) Wheat

(B) Rice

(C) Mustard

(D) Chickpea

Q42. Which insect is known as the "National Pest" of India due to its vast damage?

(A) White Fly

(B) Aphids

(C) Locust

(D) Termite

Q43. What is the fruit of "Mango" called botanically?

(A) Berry

(B) Drupe

(C) Pome

(D) Nut

Q44. The "Yellow color" of Cow Milk is due to the presence of:

(A) Casein

(B) Carotene

(C) Lactose

(D) Albumin

Q45. Which state is known as the "Apple Bowl" of India?

(A) Jammu and Kashmir

(B) Himachal Pradesh

(C) Uttarakhand

(D) Arunachal Pradesh

Q46. The "Sugar content" in Sugarcane is measured by using:

(A) Lactometer

(B) Refractometer

(C) Anemometer

(D) Barometer

Q47. Which soil order is most widely distributed in India?

(A) Inceptisols

(B) Vertisols

(C) Entisols

(D) Alfisols

Q48. The "Phalaris minor" is a major weed associated with which crop?

(A) Rice

(B) Wheat

(C) Maize

(D) Sugarcane

Q49. What is the average gestation period of a "Sow" (Pig)?

(A) 114 days

(B) 150 days

(C) 280 days

(D) 60 days

Q50. The "Silver Revolution" in India is related to the production of:

(A) Silver

(B) Eggs and Poultry

(C) Cotton

(D) Fertilizers

Detailed Solutions

Q1.

Solution

Concept:

The term "Genetics" defines the study of heredity and the variation of inherited characteristics. While Gregor Mendel is universally recognized as the "Father of Genetics" for his work on pea plants, he did not actually use the word "Genetics" to describe his findings; he referred to the units of inheritance as "factors."

Solution:

1. Historical Context: The term was derived from the Greek word "genesis," meaning origin. It was introduced after the rediscovery of Mendel's laws in 1900.

2. The Scientist: William Bateson, an English biologist, first coined the term "Genetics" in a letter to Adam Sedgwick in 1905 and later publicly at the Third International Conference on Plant Hybridization in 1906.

3. Contributions: Bateson was a chief proponent of Mendelian ideas and also introduced other fundamental terms like "allele," "homozygote," and "heterozygote."

4. Distinction: - G. Mendel: Provided the laws of inheritance. - T.H. Morgan: Provided the physical basis of inheritance (Drosophila work). - W. Bateson: Named the science "Genetics."

Final Answer: The term "Genetics" was first coined by William Bateson.

Answer: (B)

Q2.

Solution

Concept:

Plant Growth Regulators (PGRs) are chemical messengers that control various aspects of plant development. They are broadly divided into growth promoters (Auxins, Gibberellins, Cytokinins) and growth inhibitors/regulators (Abscisic Acid and Ethylene). Fruit ripening is a physiological process that involves the softening of tissue and the conversion of starch to sugar.

Solution:

1. Role of Ethylene: Ethylene (C_2H_4) is a unique PGR because it exists in a gaseous state. It is known as the "ripening hormone."

2. Mechanism: It triggers the breakdown of cell walls (softening), the degradation of chlorophyll (color change), and the synthesis of aromatic compounds (flavor).

3. Climacteric Fruits: Fruits like Mango, Banana, and Tomato show a sharp rise in ethylene production during ripening.

4. Commercial Use: Ethephon or Ethrel is commonly used in agriculture to induce uniform ripening in harvested fruits.

Final Answer: Ethylene is the plant growth regulator primarily responsible for fruit ripening.

Answer: (C)

Q3.

Solution

Concept:

Bonsai is the art of growing ornamental, artificially dwarfed trees or shrubs in small shallow pots through techniques like pruning, root reduction, and wiring. While the term itself is linguistically linked to one culture, the historical root of the practice lies elsewhere.

Solution:

1. Origin: The practice of growing miniature landscapes in trays began in China as "Penjing" or "Penzai" during the Han Dynasty (over 2000 years ago).
2. Evolution: The art was later introduced to Japan (around the 6th century), where it was refined, simplified, and popularized under the name "Bonsai."
3. Technique: It involves a delicate balance of providing enough nutrients for survival while restricting space and resources to maintain a miniature, aged appearance.
4. Misconception: Many believe it originated in Japan because the Japanese popularized it globally, but historical records confirm its Chinese origin.

Final Answer: The "Bonsai" technique (as Penjing) originated in China.

Answer: (A)

Q4.

Solution

Concept:

The oestrus cycle (or heat cycle) is the reproductive cycle found in most mammalian females. It represents the interval from one period of sexual receptivity to the next. Understanding the length of this cycle is crucial for successful Artificial Insemination (AI) and herd management.

Solution:

1. Cycle Phases: The cycle consists of Proestrus, Oestrus (standing heat), Metoestrus, and Dioestrus.
2. Species comparison: - Cattle (Cow): 21 days. - Buffalo: $\approx$ 21 days. - Sheep: 16 – 17 days.
3. Buffalo Specifics: While the average is 21 days, buffaloes are known for "Silent Heat," where the physical signs of oestrus are less pronounced compared to cows.
4. Management: Farmers must monitor the animals closely every 21 days to ensure they are bred at the correct time to maintain a "one calf per year" productivity goal.

Final Answer: The average duration of the Oestrus cycle in a buffalo is 21 days.

Answer: (B)

Q5.

Solution

Concept:

Water-holding capacity (WHC) is the ability of a soil to retain water against the force of gravity. This property is primarily determined by the soil texture, which is the relative proportion of sand, silt, and clay particles.

Solution:

1. Particle Size and Pore Space: - Sandy soils: Have large particles and large "macropores." Water drains quickly through these pores. - Clayey soils: Have very small, fine particles and a vast network of "micropores."

2. Surface Area: Clay particles have a much larger total surface area per unit volume than sand. Since water film adheres to the surface of soil particles, more surface area means more water retention.

3. Adsorption: The small size of micropores in clay creates strong capillary forces that hold water tightly, leading to the highest WHC among all texture classes.

4. Practical implication: While clay holds the most water, much of it is held so tightly that plants cannot easily extract it compared to loamy soils.

Final Answer: Clayey soil has the highest water-holding capacity.

Answer: (C)

Q6.

Solution

Concept:

Agricultural research institutions are pivotal for developing high-yielding and disease-resistant crop varieties. Rice is a primary staple food in India, and the national research hub dedicated to this crop is one of the oldest and most prestigious institutions under the Indian Council of Agricultural Research (ICAR).

Solution:

1. Historical Background: The Central Rice Research Institute (CRRI) was established in 1946 to address the food crisis following the Great Bengal Famine.

2. Location: It is located in Cuttack, Odisha. This region is part of the traditional rice-growing belt of India, providing an ideal environment for field experiments.

3. Rename: The institute has recently been renamed the National Rice Research Institute (NRRI).

4. Global Context: While the International Rice Research Institute (IRRI) is located in the Philippines (Manila), the "Central" or "National" institute of India is located in Cuttack.

Final Answer: The Central Rice Research Institute (CRRI) is located in Cuttack.

Answer: (B)

Q7.

Solution

Concept:

Photoperiodism is the physiological reaction of organisms to the length of night or a dark period. Plants are classified into three main groups: Short Day Plants (SDP), Long Day Plants (LDP), and Day Neutral Plants (DNP), based on the critical day length required to trigger flowering.

Solution:

1. Short Day Plants (SDP): These plants flower only when the day length is less than a certain critical threshold (usually during late summer, autumn, or winter). They actually require a long, uninterrupted period of darkness.
2. Examples: - Rice (*Oryza sativa*): A classic SDP, typically grown as a Kharif crop in India, flowering as days get shorter. - Soybeans, Maize, and Tobacco are also common SDPs.
3. Long Day Plants (LDP): Wheat, Barley, and Radish are LDPs. They require longer daylight hours to flower and are typically grown in the Rabi (winter/spring) season.
4. Conclusion: Among the options, Rice is the definitive Short Day Plant.

Final Answer: Rice is a Short Day Plant (SDP).

Answer: (B)

Q8.

Solution

Concept:

Plant diseases can be caused by various pathogens, including fungi, bacteria, viruses, and specialized organisms like Phytoplasmas (formerly called Mycoplasma-Like Organisms or MLOs). "Little Leaf" is a characteristic symptom where the leaves become extremely small, crowded, and malformed, resulting in a bushy appearance.

Solution:

1. Disease Mechanism: Phytoplasmas are specialized bacteria that lack a cell wall and inhabit the phloem tissues of the plant.
2. Symptoms in Brinjal: The affected plant shows a significant reduction in leaf size. The petioles are shortened, and the plant becomes sterile, meaning it fails to produce fruits.
3. Vector: The disease is not spread by air or water but is transmitted by a specific insect vector, the leafhopper (*Hishimonus phycitis*).
4. Control: Management involves removing infected plants (rogueing) and controlling the leafhopper population using insecticides.

Final Answer: Little Leaf of Brinjal is caused by Phytoplasma (MLO).

Answer: (C)

Q9.

Solution

Concept:

Di-ammonium Phosphate (DAP) is one of the most widely used complex fertilizers in the world. A complex fertilizer provides more than one primary nutrient. DAP is valued because it provides both Nitrogen (N) and Phosphorus (P) in a highly concentrated and water-soluble form.

Solution:

1. Grade Analysis: The standard grade for DAP is 18–46–0. This means it contains 18% Nitrogen and 46% Phosphorus (P_2O_5).

2. Form of Nutrients: - Nitrogen is present in the "Ammoniacal" form (NH_4), which is less prone to leaching than the nitrate form. - Phosphorus is present in a water-soluble form, making it readily available for root uptake.

3. Application: Because of its high Phosphorus content, it is primarily used as a "basal" dose (applied at the time of sowing) to help in root development and early plant vigor.

Final Answer: The nitrogen percentage in DAP is 18%.

Answer: (A)

Q10.

Solution

Concept:

Fibre crops often require specialized post-harvest processing to separate the usable fibre from the woody or gummy parts of the plant. This process is called "Retting," which is essentially a controlled biological degradation.

Solution:

1. The Process: Retting involves submerging the plant stems in water (tanks, ponds, or slow-moving rivers).

2. Biological Action: Action by bacteria and fungi dissolves the pectin and other "gummy" substances that bind the fibres to the stem.

3. Associated Crop: This is the standard procedure for Jute ($Corchorus\ spp.$). After retting is complete (usually 10 to 30 days), the fibres are stripped from the stalks by hand, washed, and dried.

4. Quality Factors: Clean, stagnant water and a temperature of about $34^{\circ}C$ are ideal for producing high-quality jute fibre through retting.

Final Answer: Retting is the process associated with Jute.

Answer: (B)

Q11.

Solution

Concept:

The scientific classification of honey bees is part of the study of Apiculture. Honey bees belong to the genus *Apis*. Different species are found across the globe, each with distinct behavioral and productive characteristics. Identification of the native honey bee species is important for local honey production and pollination management.

Solution:

1. Identification of Species: - *Apis mellifera*: The European or Western honey bee, used globally for commercial beekeeping. - *Apis dorsata*: The Rock bee or giant bee, known for being aggressive and building single large combs in the open. - *Apis florea*: The Little bee, which builds small combs in bushes. - *Apis cerana indica*: The Indian honey bee, a subspecies of the Asiatic honey bee.

2. Characteristics: *Apis cerana indica* is a domesticated species native to India and other parts of Asia. It is smaller and more docile than *Apis mellifera* but produces less honey.

3. Practical Usage: It is well-adapted to the local tropical climate and is commonly used by traditional beekeepers in India for hive-based honey production.

Final Answer: The scientific name of the Indian Honey Bee is *Apis cerana indica*.

Answer: (B)

Q12.

Solution

Concept:

Tillage is the mechanical manipulation of soil. It is divided into two main categories: Primary and Secondary. Primary tillage is the first soil-related operation performed after the harvest of the previous crop to open up the soil and incorporate residues.

Solution:

1. Primary Tillage Implements: These are heavy-duty tools designed to cut and shatter compact soil to a deeper level. The most common example is the Mould Board (M.B.) Plough, which is used for deep ploughing and turning the soil.

2. Secondary Tillage Implements: These are lighter tools used after primary tillage to refine the seedbed. Examples include: - Harrows (used for breaking clods and leveling). - Cultivators (used for loosening soil and weed control). - Hoes (used for intercultural operations).

3. Function of M.B. Plough: It is specifically designed to invert the soil, which helps in burying weeds and crop residues, making it a definitive primary tillage tool.

Final Answer: The M.B. Plough is a primary tillage implement.

Answer: (C)

Q13.

Solution

Concept:

Vitamins are essential organic micronutrients required for the normal growth and metabolism of animals. They are classified into two groups based on their solubility: Water-soluble and Fat-soluble. This solubility determines how they are absorbed, transported, and stored in the body.

Solution:

1. Fat-soluble Vitamins: These vitamins are absorbed along with dietary fats and are stored in the liver and fatty tissues (adipose tissue). They can stay in the body for long periods. - The group includes Vitamin A, Vitamin D, Vitamin E, and Vitamin K.
2. Water-soluble Vitamins: These are not stored in the body in significant amounts and are excreted in urine if consumed in excess. - The group includes Vitamin C and the Vitamin B-complex.
3. Nutritional Importance: Since fat-soluble vitamins are stored, excessive intake can lead to toxicity (hypervitaminosis), whereas water-soluble vitamins must be consumed more regularly.

Final Answer: The fat-soluble vitamins are A, D, E, and K.

Answer: (B)

Q14.

Solution

Concept:

Certain crops are characterized by their extreme resilience to harsh environmental conditions, particularly drought and high temperatures. In the semi-arid regions of the world, a specific cereal crop is favored because of its ability to suspend growth during periods of moisture stress and resume it once water becomes available.

Solution:

1. Physiological Adaptation: Sorghum (*Sorghum bicolor*) is known as the "Camel of the Desert" or "Camel of the Plant World."
2. Survival Mechanisms: - It has an extensive, deep root system to extract water. - Its leaves have a waxy coating and can roll up to reduce transpiration. - It can enter a dormant state (quiescence) during severe drought.
3. Comparison: While Pearl Millet is also drought-hardy, the specific nickname "Camel of the Desert" is traditionally associated with Sorghum due to these physiological "idling" capabilities.

Final Answer: Sorghum is known as the "Camel of the Desert."

Answer: (B)

Q15.

Solution

Concept:

Biological Nitrogen Fixation (BNF) is driven by the complex enzyme system known as Nitrogenase. This enzyme catalyzes the conversion of atmospheric nitrogen (N_2) into ammonia (NH_3). The enzyme requires specific metallic cofactors to function.

Solution:

1. Enzyme Structure: The Nitrogenase enzyme complex consists of two protein components: the Fe-protein (Dinitrogenase reductase) and the MoFe-protein (Dinitrogenase).
2. Elemental Requirement: Molybdenum (Mo) is a crucial part of the cofactor (FeMo-co) located at the active site where nitrogen is reduced.
3. Nutritional Deficiency: If a soil is deficient in Molybdenum, legumes like peas and soybeans will fail to fix nitrogen effectively, even if *Rhizobium* bacteria are present, because the nitrogenase enzyme cannot be synthesized correctly.
4. Other Elements: While Iron (Fe) is also present, Molybdenum is the unique micronutrient most famously associated with this specific biochemical process.

Final Answer: The enzyme Nitrogenase contains Molybdenum.

Answer: (C)

Q16.

Solution

Concept:

Black Quarter (also known as Blackleg) is an acute, infectious, and highly fatal bacterial disease of cattle and sheep. It is characterized by gaseous swelling in the heavy muscles, particularly of the hindquarters. The disease is soil-borne and often occurs during the rainy season.

Solution:

1. Pathogen Identification: - *Bacillus anthracis*: Causes Anthrax. - *Clostridium chauvoei*: An anaerobic, spore-forming, rod-shaped bacterium that causes Black Quarter.
2. Symptoms: Infected animals develop high fever and characteristic "crepitating" (crackling) swellings. When the skin over the affected muscle is pressed, a crackling sound is heard due to the accumulation of gas produced by the bacteria.
3. Muscle Appearance: Upon incision, the affected muscle appears dark red to black (hence the name) and emits a characteristic rancid or "sour" odor.
4. Management: Since the disease is rapidly fatal, prevention through annual vaccination before the onset of the monsoon is the most effective strategy.

Final Answer: Black Quarter (BQ) is caused by *Clostridium chauvoei*.

Answer: (B)

Q17.

Solution

Concept:

The National Dairy Development Board (NDDB) was founded to transform India's dairy sector from a subsistence activity into a modern industry. It was the implementing agency for "Operation Flood," the world's largest dairy development program.

Solution:

1. Foundation: The NDDB was established in 1965 by an act of the Indian Parliament.
2. Headquarters: Its headquarters are located in Anand, Gujarat.
3. Leadership: The first chairman was Dr. Verghese Kurien, who was inspired by the success of the Kaira District Co-operative Milk Producers' Union (Amul).
4. Objective: The primary goal was to replicate the "Amul Model" across India, creating a national milk grid that linked rural milk producers with urban consumers.

Final Answer: The National Dairy Development Board was established in 1965.

Answer: (A)

Q18.

Solution

Concept:

Banana (*Musa spp.*) is a monocotyledonous perennial herb. Commercial bananas are typically triploid and seedless, meaning they cannot be propagated through seeds. Instead, they rely entirely on asexual (vegetative) propagation methods.

Solution:

1. Propagation Material: Bananas produce underground stems called "rhizomes" which give rise to lateral shoots known as "suckers."
2. Types of Suckers: - Water Suckers: Have broad leaves and are not ideal for planting. - Sword Suckers: Have narrow, sword-like leaves and a strong, well-developed rhizome.
3. Preferred Method: Sword suckers are the standard and most common method of propagation because they grow faster and produce healthier, more vigorous plants compared to water suckers.
4. Tissue Culture: While tissue culture (micropropagation) is increasingly popular for producing large quantities of virus-free plants, the traditional "common" method remains the use of sword suckers.

Final Answer: The most common method of propagation in Banana is Sword suckers.

Answer: (C)

Q19.

Solution

Concept:

Physiological disorders in fruit crops are often caused by the deficiency of micronutrients. "Internal Necrosis" is a condition where the tissues inside the fruit turn brown or black and rot, while the exterior may sometimes appear normal or show slight discoloration.

Solution:

1. Mango Internal Necrosis: This disorder is specifically observed in certain Mango cultivars (like Dashehari). It is characterized by the browning of the pulp near the stone.

2. Nutritive Cause: Research has linked this condition to the deficiency of Boron (B). Boron is essential for cell wall integrity and the transport of sugars.

3. Distinction from "Black Tip": Do not confuse this with "Black Tip" of mango, which is caused by the toxic gases (SO_2) from brick kilns. Internal necrosis is a purely nutritional deficiency.

4. Remediation: Foliar application of Borax (0.6%) at the time of flowering and fruit set can effectively control this disorder.

Final Answer: Internal Necrosis of Mango is caused by Boron deficiency.

Answer: (C)

Q20.

Solution

Concept:

Soil water potential or "tension" describes how tightly water is held by soil particles. As the soil dries, the tension increases, making it harder for plant roots to extract water. Measuring this tension helps farmers schedule irrigation more precisely.

Solution:

1. Instrument Analysis: - Piezometer: Measures the pressure of groundwater (hydrostatic pressure). - Anemometer: Measures wind speed. - Lysimeter: Measures total evapotranspiration. - Tensiometer: Measures the matric potential (tension) of soil water.

2. Working Mechanism: A tensiometer consists of a water-filled tube with a porous ceramic cup at the bottom and a vacuum gauge at the top. As soil dries, water is pulled out through the cup, creating a vacuum that the gauge measures.

3. Practical Limit: Tensiometers work best in the range of 0 to 0.85 bars. They are highly effective for sandy and loamy soils but less so for heavy clay soils that dry beyond this limit.

Final Answer: The instrument used to measure soil water tension is the Tensiometer.

Answer: (B)

Q21.

Solution

Concept:

Curing is a post-harvest treatment used to remove excess moisture and promote chemical changes that improve the quality, flavor, and shelf life of certain crops. In some crops, this process is essential to develop the characteristic aroma and color required for commercial sale.

Solution:

1. Tobacco Curing: In Tobacco (*Nicotiana tabacum*), curing is the most critical post-harvest operation. It involves a slow drying process that allows enzymes to break down chlorophyll and convert starches into sugars.
2. Varieties of Curing: Common methods include Flue-curing (used for Virginia tobacco), Air-curing, Fire-curing, and Sun-curing.
3. Objective: The goal is to produce leaves with a specific texture, golden-yellow color (in flue-cured), and the desired "smoking quality" or aroma.
4. Other Crops: While onions and potatoes are also "cured" to toughen their skins for storage, the term is most professionally and extensively associated with the flavor-development process in Tobacco.

Final Answer: Curing is most important in Tobacco for flavor development.

Answer: (B)

Q22.

Solution

Concept:

Yellow Vein Mosaic (YVM) is one of the most destructive diseases in vegetable cultivation. It causes significant yield losses by affecting the photosynthetic capacity of the plant and making the fruits unmarketable.

Solution:

1. Target Crop: YVM is the most serious disease of Okra (Bhindi, *Abelmoschus esculentus*).
2. Symptoms: The primary symptom is the yellowing of the veins and veinlets of the leaves, while the rest of the leaf remains green (initial stage). Eventually, the entire leaf may turn yellow. The fruits produced are small, hard, and yellowish-white.
3. Vector: The virus (Bhendi yellow vein mosaic virus) is transmitted by the Whitefly (*Bemisia tabaci*).
4. Control: Farmers use resistant varieties (like Parbhani Kranti or Arka Anamika) and spray systemic insecticides to control the whitefly population.

Final Answer: Yellow Vein Mosaic is a devastating viral disease of Okra (Bhindi).

Answer: (B)

Q23.

Solution

Concept:

A balanced ration for livestock consists of water, proteins, carbohydrates, fats, minerals, and vitamins. Each component serves a specific physiological role. For maintenance, growth, and work, animals require a constant supply of energy.

Solution:

1. Energy Sources: While fats provide more energy per gram, carbohydrates are the primary and most economical source of energy in a standard livestock diet.

2. Sources of Carbohydrates: - Grains (Maize, Barley, Sorghum). - Roughages (Hay, Silage, Straw). - By-products (Rice bran, Wheat bran).

3. Digestion: In ruminants (cows, buffaloes), complex carbohydrates like cellulose are broken down by rumen microbes into Volatile Fatty Acids (VFAs), which provide up to 70% of the animal's energy requirements.

4. Role of Proteins: Proteins are primarily used for tissue building (muscle, milk, wool) rather than as a primary energy source.

Final Answer: Carbohydrates are the primary source of energy in a livestock ration.

Answer: (B)

Q24.

Solution

Concept:

Soil erosion is the removal of the topsoil by water or wind. Water erosion occurs in distinct stages, each progressively more visible and damaging. Some forms are extremely dangerous because they remove the most fertile part of the soil without the farmer noticing.

Solution:

1. Stages of Water Erosion: - Splash: Raindrops hitting bare soil. - Sheet: Uniform removal of a thin layer of topsoil. - Rill: Small, well-defined channels. - Gully: Large, deep ravines.

2. Sheet Erosion: This is often called the "Death of the Farmer" or "Creeping Death." Because it removes soil in a very thin, uniform layer across the entire field, it does not leave obvious scars like gullies.

3. Impact: Since the top layer contains the most organic matter and nutrients, its gradual loss leads to a steady, unexplained decline in crop yields over several years.

Final Answer: Sheet erosion is known as the "Death of the Farmer."

Answer: (B)

Q25.

Solution

Concept:

Hybridization in Maize (*Zea mays*) revolutionized agriculture by exploiting "Heterosis" or hybrid vigor. Depending on the parental lines used, hybrids can be classified as single-cross, three-way cross, or double-cross.

Solution:

1. Single Cross: Crossing two inbred lines ($A \times B$). This was proposed by G.H. Shull in 1908.
2. Double Cross: Crossing two different single-cross hybrids $[(A \times B) \times (C \times D)]$.
3. The Scientist: The double-cross hybrid technique was proposed by D.F. Jones in 1918.
4. Reason for Development: At that time, inbred lines were very weak and produced few seeds. The double-cross method used vigorous single-cross hybrids as parents, making commercial hybrid seed production much more economical and practical.

Final Answer: The Double Cross Hybrid technique in Maize was given by D.F. Jones.

Answer: (B)

Q26.

Solution

Concept:

The pH scale measures the acidity or alkalinity of the soil solution, ranging from 0 to 14. This value is determined by the concentration of hydrogen ions (H^+). The pH level is a critical indicator of soil health and chemical properties.

Solution:

1. pH Scale Breakdown: - pH < 7: Acidic (High concentration of H^+). - pH > 7: Alkaline/Basic (High concentration of OH^-). - pH = 7: Neutral.
2. Chemical Meaning: At a pH of 7, the concentration of hydrogen ions and hydroxyl ions is exactly balanced. Pure water typically has a pH of 7.0.
3. Agricultural Context: In soil science, "neutral" usually refers to a range (6.6 to 7.3). However, mathematically and strictly speaking, 7.0 is the point of neutrality.

Final Answer: The pH value of a "Neutral" soil is 7.0.

Answer: (B)

Q27.

Solution

Concept:

Cotton (*Gossypium spp.*) is a major commercial crop. India was the first country to successfully exploit hybrid vigor (heterosis) in cotton on a commercial scale, leading to a significant increase in production and fiber quality.

Solution:

1. Identification: The world's first commercial cotton hybrid is H-4 (Hybrid-4).
2. Developer: It was developed by Dr. C.T. Patel at the Main Cotton Research Station, Surat (Gujarat Agricultural University) in 1970.
3. Genetic Background: It was an intraspecific hybrid developed by crossing two varieties of *Gossypium hirsutum* (American Cotton): 'Gujarat 67' and 'American Nectariless'.
4. Impact: The release of H-4 marked a turning point in Indian agriculture, proving that hybrid technology could be successfully applied to allotetraploid species like cotton.

Final Answer: The first cotton hybrid in the world is H-4.

Answer: (A)

Q28.

Solution

Concept:

Milk secretion and milk removal are two different physiological processes. While several hormones are involved in the development of the mammary glands and the synthesis of milk, a specific hormone is required to trigger the physical release of milk from the alveoli.

Solution:

1. Hormone Action: Oxytocin is often called the "Love Hormone" or "Milk Ejection Hormone." It is secreted by the posterior pituitary gland.
2. Mechanism: When a calf suckles or the udder is massaged, a neural signal is sent to the brain. Oxytocin is released into the bloodstream and causes the myoepithelial cells surrounding the alveoli to contract, squeezing the milk into the duct system.
3. Time Sensitivity: The effect of oxytocin lasts only for about 5 to 7 minutes. This is why milking must be completed quickly once the "let-down" has occurred.
4. Contrast: Prolactin is the hormone responsible for the *synthesis* (production) of milk, not its release.

Final Answer: Oxytocin is the hormone responsible for "Milk Let-down."

Answer: (C)

Q29.

Solution

Concept:

Plants produce energy through photosynthesis in the form of simple sugars (glucose). However, glucose is soluble and chemically reactive, making it unsuitable for long-term storage within the plant cells.

Solution:

1. Conversion: Plants convert excess glucose into a complex, insoluble polysaccharide for storage.
2. Identification: Starch is the primary storage form of carbohydrates in plants. It is stored in specialized organelles called amyloplasts, found in roots, tubers, and seeds.
3. Animal Equivalent: In contrast, animals and fungi store their excess glucose in the form of Glycogen (often called "animal starch").
4. Structural Carbohydrate: Cellulose is also a carbohydrate found in plants, but it is used for structural purposes (cell walls) rather than as an energy reserve.

Final Answer: The storage form of carbohydrate in plants is Starch.

Answer: (C)

Q30.

Solution

Concept:

Vegetable crops in the Brassicaceae family (like Cauliflower and Cabbage) have specific requirements for micronutrients. A deficiency in these elements can lead to structural deformities that render the crop unmarketable.

Solution:

1. Symptom Description: In "Whip tail" disease, the leaf blade (lamina) fails to develop properly. Only the midrib grows, giving the leaf a thin, whip-like appearance. In severe cases, the growing point is destroyed.
2. Nutritive Cause: This condition is caused specifically by a deficiency of Molybdenum (Mo).
3. Soil Influence: Molybdenum is the only micronutrient that becomes *less* available as soil acidity increases. Therefore, Whip tail is commonly found in acidic soils (pH < 5.5).
4. Correction: The disease can be prevented by liming the soil to increase pH or by applying Ammonium Molybdate.

Final Answer: Whip tail in Cauliflower is caused by Molybdenum deficiency.

Answer: (B)

Q31.

Solution

Concept:

Irrigation efficiency is a measure of how much water is actually used by the crop compared to the total amount applied. Different systems have varying levels of water loss through evaporation, runoff, and deep percolation.

Solution:

1. Comparison of Efficiency: - Surface Irrigation (Border/Furrow): Efficiency is low (40 – 60%) due to high evaporation and seepage. - Sprinkler Irrigation: Higher efficiency (70 – 80%) as it mimics rainfall but can lose water to wind and evaporation. - Drip (Trickle) Irrigation: Highest efficiency (90 – 95%).

2. Why Drip is Superior: In drip irrigation, water is applied drop by drop directly to the root zone of the plant through a network of emitters. Since the soil surface remains mostly dry, evaporation is minimized and there is zero surface runoff.

3. Practical Application: It is the most suitable method for water-scarce regions and for high-value horticultural crops.

Final Answer: Drip irrigation has the highest water application efficiency.

Answer: (D)

Q32.

Solution

Concept:

The color of vegetables and fruits is determined by specific organic pigments. These pigments often serve as antioxidants and are synthesized by the plant in response to light and temperature during the ripening process.

Solution:

1. Pigment Identification: - Anthocyanin: Provides red, purple, or blue colors (e.g., in Grapes or Brinjal). - Carotene: Provides orange color (e.g., in Carrots). - Lycopene: A bright red carotenoid pigment.

2. Tomato Coloration: Lycopene is the specific pigment responsible for the deep red color of a ripe tomato (*Solanum lycopersicum*).

3. Temperature Sensitivity: The synthesis of lycopene is highly sensitive to temperature; it is optimally produced between $21^{\circ}C$ and $24^{\circ}C$. If temperatures exceed $27^{\circ}C$, lycopene production drops, resulting in more yellow-orange fruits.

Final Answer: The red color of Tomato is due to Lycopene.

Answer: (C)

Q33.

Solution

Concept:

Bio-fertilizers are preparations containing living cells of efficient strains of microorganisms. Unlike chemical fertilizers that provide nutrients directly, bio-fertilizers enhance nutrient availability by biological processes like nitrogen fixation or phosphorus solubilization.

Solution:

1. Analysis of Options: - Urea and Super Phosphate: Synthetic chemical fertilizers. - Potash: A mineral/chemical source of Potassium. - Azotobacter: A genus of free-living, aerobic, nitrogen-fixing bacteria.

2. Mechanism: *Azotobacter* lives in the rhizosphere (the soil around the roots) and converts atmospheric nitrogen into a form that plants can use. It also secretes growth-promoting substances like vitamins and gibberellins.

3. Usage: It is commonly used as a seed treatment or soil application for non-leguminous crops like Wheat, Rice, and Maize.

Final Answer: Azotobacter is a bio-fertilizer.

Answer: (B)

Q34.

Solution

Concept:

Foot and Mouth Disease (FMD) is an extremely contagious and economically devastating disease affecting cloven-hoofed animals (cattle, buffaloes, sheep, and goats). It is characterized by the formation of vesicles (blisters) in the mouth and on the feet.

Solution:

1. Pathogen: FMD is caused by an Aphthovirus of the family Picornaviridae. There are seven major serotypes (O, A, C, SAT-1, SAT-2, SAT-3, and Asia-1).

2. Symptoms: Infected animals suffer from high fever, followed by the appearance of blisters on the tongue, lips, and the interdigital space of the hooves. This leads to heavy salivation (drooling) and lameness.

3. Transmission: The virus spreads through contact, contaminated fodder/water, and even through the air over short distances.

4. Management: Treatment is supportive, as there is no cure for the virus. Control is achieved through regular mass vaccination (usually twice a year in India).

Final Answer: Foot and Mouth Disease (FMD) is caused by a Virus.

Answer: (B)

Q35.

Solution

Concept:

Identifying crop varieties is a fundamental part of agronomic knowledge. Fodder grasses are cultivated to provide green forage for livestock throughout the year. Guinea Grass (*Panicum maximum*) is a high-yielding, perennial tropical grass.

Solution:

1. Variety Background: "Gatton" is a prominent variety of Guinea Grass. It was selected for its superior leafiness and high productivity.
2. Characteristics: Gatton Guinea is more frost-tolerant and has finer stems than many other varieties, making it highly palatable to cattle and horses.
3. Cultivation: It is typically propagated by seeds or rooted slips and responds very well to nitrogen fertilization and irrigation.

Final Answer: Gatton is a variety of Guinea Grass.

Answer: (C)

Q36.

Solution

Concept:

Soil reclamation often requires the addition of chemical amendments to correct pH imbalances or neutralize specific toxic ions. Gypsum is the most commonly used amendment for reclaiming sodic (alkali) soils because it provides calcium ions to displace excess sodium on the soil particles.

Solution:

1. Chemical Identity: Gypsum is a soft sulfate mineral composed of calcium sulfate dihydrate.
2. Molecular Formula: The chemical formula is $CaSO_4 \cdot 2H_2O$.
3. Function in Soil: The calcium (Ca^{2+}) in gypsum replaces sodium (Na^+) on the soil exchange complex. The resulting sodium sulfate (Na_2SO_4) is soluble and can be leached out with water, thereby improving soil structure and permeability.
4. Distinction: - $CaCO_3$ is Calcium Carbonate (Lime). - $MgSO_4$ is Magnesium Sulfate (Epsom salt).

Final Answer: The chemical formula of Gypsum is $CaSO_4 \cdot 2H_2O$.

Answer: (B)

Q37.

Solution

Concept:

The study of soil is a multidisciplinary field within agricultural science. It is divided into two main branches based on the perspective of the study: one focuses on the soil's properties as a natural body, while the other focuses on the soil as a medium for plant growth.

Solution:

1. Branch Definitions: - Pedology: The study of soil in its natural environment, focusing on soil formation (pedogenesis), morphology, and classification. - Edaphology: The study of soil in relation to living things, particularly plants. - Pomology: The study of fruit crops. - Olericulture: The study of vegetable crops.

2. Origin: The word "Pedology" is derived from the Greek word *pedon*, meaning "soil" or "earth."

3. Usage: When we refer to the "study of soil" in a general sense, especially regarding its origin and structure, Pedology is the standard term.

Final Answer: The study of soil is known as Pedology.

Answer: (B)

Q38.

Solution

Concept:

Medicinal plants are valued for the specific secondary metabolites they produce. These chemicals are often concentrated in specific parts of the plant, such as the leaves, roots, seeds, or bark. Quinine is a historically significant alkaloid used to treat malaria.

Solution:

1. Source Plant: Quinine is extracted from the Cinchona tree (*Cinchona officinalis*), which is native to the Andes mountains but also grown in regions like Darjeeling and the Nilgiris in India.

2. Localization: The highest concentration of quinine alkaloids is found in the dried bark of the stem and roots.

3. Extraction: The bark is stripped from the tree, dried, and processed to isolate the medicinal compounds.

4. Significance: Until the development of synthetic alternatives, Cinchona bark was the only effective treatment for malaria globally.

Final Answer: Quinine is obtained from the Bark of the Cinchona tree.

Answer: (C)

Q39.

Solution

Concept:

Pasteurization is a heat-treatment process designed to kill pathogenic microorganisms and reduce the number of spoilage organisms in food, particularly milk, without significantly altering its nutritional value or flavor.

Solution:

1. Standard Methods: - Low-Temperature Long-Time (LTLT) / Holder Method: $63°C$ for 30 minutes. - High-Temperature Short-Time (HTST): $72°C$ for 15 seconds.
2. Effectiveness: These specific combinations of time and temperature are calculated to ensure the destruction of *Coxiella burnetii* (the most heat-resistant pathogen found in milk) and *Mycobacterium tuberculosis*.
3. Cooling: After heating, the milk must be rapidly cooled to below $5°C$ to prevent the growth of any surviving thermoduric bacteria.
4. Analysis of Options: Option (A) accurately describes the standard LTLT/Holder method used in many dairy plants.

Final Answer: Pasteurization (Holder method) involves heating milk to $63°C$ for 30 minutes.

Answer: (A)

Q40.

Solution

Concept:

Gummosis is a non-specific symptom where an amber-colored, gummy substance (exudate) oozes from the bark of the trunk or branches. It is often a sign of physiological stress, fungal infection, or mechanical injury.

Solution:

1. Most Affected Crop: While many trees can exhibit gumming, Gummosis is a classic and highly damaging disease of Citrus species (Oranges, Lemons, Limes).
2. Pathogen: In Citrus, it is primarily caused by the fungus *Phytophthora*. The infection leads to the death of the bark, which then splits and releases the gum.
3. Conditions: The disease thrives in poorly drained soils and where the graft union is too close to the ground, allowing soil-borne fungi to infect the bark.
4. Management: Improving drainage and painting the trunk with Bordeaux paste are common control measures.

Final Answer: Gummosis is a disease commonly associated with Citrus.

Answer: (B)

Q41.

Solution

Concept:

The Indian Agricultural Research Institute (IARI) uses the "Pusa" prefix for its improved varieties. Mustard (Indian Mustard, *Brassica juncea*) is a key oilseed crop in India, and breeding efforts focus on increasing oil content and seed size.

Solution:

1. Variety Background: "Pusa Bold" is a widely cultivated variety of Indian Mustard.
2. Characteristics: As the name suggests, it is characterized by its large (bold) seeds. It is a high-yielding variety that matures in approximately 110 – 140 days.
3. Adaptability: It is particularly popular in Northern India due to its tolerance to moderate salinity and its high oil content (around 38 – 40%).
4. Contrast: While there are Pusa varieties for Wheat (e.g., Pusa Gold) and Rice (e.g., Pusa Basmati 1), "Pusa Bold" is the textbook example for Mustard.

Final Answer: Pusa Bold is an improved variety of Mustard.

Answer: (C)

Q42.

Solution

Concept:

Pests are organisms that cause economic damage to crops. While some pests are regional, others are found across the entire country and affect a wide range of host plants.

Solution:

1. Identification: Termites (*Odontotermes obesus*) are often referred to as the "National Pest" of India or the "Silent Destroyer."
2. Impact: They are polyphagous, meaning they feed on many different types of plants. They cause massive damage to crops like Sugarcane, Wheat, and pulses, as well as to timber and wooden structures.
3. Biology: Termites are social insects that live in underground colonies. They attack the root system or the base of the stem, often leading to the sudden drying and death of the plant.
4. Management: Control involves soil treatment with chemicals or the application of Neem cake to the soil.

Final Answer: Termite is known as the "National Pest" of India.

Answer: (D)

Q43.

Solution

Concept:

Botanical classification of fruits depends on the structure of the ovary and the nature of the fruit wall (pericarp). Knowing the fruit type helps in understanding the ripening and storage characteristics of the crop.

Solution:

1. Analysis of Mango: The Mango (*Mangifera indica*) develops from a monocarpellary superior ovary.
2. Classification: It is a Drupe (Stone fruit).
3. Structure: - Exocarp: The thin outer skin. - Mesocarp: The fleshy, edible middle part. - Endocarp: The hard, stony inner layer that encloses the seed.
4. Comparison: - Berry: Fleshy throughout (e.g., Grapes, Tomato). - Pome: Edible part is the thalamus (e.g., Apple).

Final Answer: The fruit of Mango is botanically a Drupe.

Answer: (B)

Q44.

Solution

Concept:

The physical appearance of milk varies between species. While buffalo milk is characteristically bright white, cow milk often has a distinct creamy or yellowish tinge.

Solution:

1. Pigment Identification: The yellowish color of cow milk is primarily due to the presence of Carotene (specifically Beta-Carotene).
2. Source: Cows ingest carotene from green fodder. Unlike buffaloes, which efficiently convert all carotene into colorless Vitamin A in their bodies, cows transfer a portion of the unchanged carotene directly into their milk.
3. Nutritional Note: Carotene is a precursor to Vitamin A, making cow milk a good source of this essential nutrient.
4. Contrast: Casein is the primary protein in milk and is responsible for its overall white opacity, but not the yellow tint.

Final Answer: The yellow color of Cow Milk is due to Carotene.

Answer: (B)

Q45.

Solution

Concept:

Temperate fruits like apples require specific "chilling hours" (temperatures below $7^{\circ}C$) during the winter to break dormancy and flower properly. Therefore, their cultivation is restricted to high-altitude regions in India.

Solution:

1. Production Leaders: Himachal Pradesh and Jammu & Kashmir are the primary producers of apples in India.
2. Specific Nickname: Himachal Pradesh is widely known as the "Apple Bowl of India" because the fruit is a cornerstone of the state's economy, and it produces a high diversity of varieties like Royal Delicious, Red Delicious, and Golden Delicious.
3. Key Regions: Shimla, Kullu, and Mandi districts in Himachal Pradesh are world-famous for their apple orchards.

Final Answer: Himachal Pradesh is known as the "Apple Bowl" of India.

Answer: (B)

Q46.

Solution

Concept:

Measuring the maturity of sugarcane is crucial to ensure maximum sugar recovery. As the cane matures, the concentration of total soluble solids (TSS) in the juice increases.

Solution:

1. Instrument: A Refractometer (specifically a Hand Refractometer or Brix Hydrometer) is used to measure the "Brix" value of the juice.
2. Brix Definition: Brix is a measure of the percentage of sucrose by weight in a solution. In sugarcane, a Brix reading of 18 – 20% indicates that the crop has reached commercial maturity.
3. Operation: A drop of juice is placed on the prism of the refractometer, and the degree of light refraction is read on a scale.
4. Comparison: - Lactometer: Measures specific gravity of milk. - Anemometer: Measures wind speed.

Final Answer: The sugar content in Sugarcane is measured using a Refractometer.

Answer: (B)

Q47.

Solution

Concept:

Soil taxonomy classifies soils into "Orders" based on their properties and formation. India has a diverse range of soils, but one order covers the largest geographical area due to the vast river systems and geological history of the subcontinent.

Solution:

1. Order Analysis: - Inceptisols: Relatively young soils with minimal profile development. They are the most widely distributed order in India. - Entisols: Very young soils with no profile development (e.g., new alluvial or desert soils). - Vertisols: Heavy clay "black cotton" soils. - Alfisols: Red/Lateritic soils.

2. Distribution: Inceptisols occupy nearly 39% of the total geographical area of India, covering large parts of the Indo-Gangetic plains and the peninsular region.

Final Answer: Inceptisols are the most widely distributed soil order in India.

Answer: (A)

Q48.

Solution

Concept:

Mimicry weeds are those that physically resemble the crop plant so closely that they are difficult to identify and remove during the vegetative stage. These weeds compete heavily for nutrients and water.

Solution:

1. Identification: *Phalaris minor* (commonly known as Gulli-danda or Canary grass) is a major mimicry weed of Wheat (*Triticum aestivum*).

2. Resemblance: It looks almost identical to the wheat plant until it produces its inflorescence (flower head).

3. Economic Impact: If not controlled, it can reduce wheat yields by 30 – 50%.

4. Resistance Issue: It is famous in agricultural science because it developed resistance to the widely used herbicide 'Isoproturon', requiring the use of newer chemicals like Sulfosulfuron.

Final Answer: *Phalaris minor* is a major weed associated with Wheat.

Answer: (B)

Q49.

Solution

Concept:

The gestation period is the time elapsed between conception and birth. Each livestock species has a fixed biological duration that farmers must know to manage farrowing (birth in pigs).

Solution:

1. Species Comparison: - Cow: $\approx$ 282 days. - Goat/Sheep: $\approx$ 150 days. - Sow (Pig): $\approx$ 114 days.
2. Memory Rule: The gestation of a pig is often remembered as "3 months, 3 weeks, and 3 days" (90 + 21 + 3 = 114 days).
3. Management: Pigs are "prolific" breeders, usually producing a litter of 8 to 12 piglets after this relatively short gestation period.

Final Answer: The average gestation period of a Sow is 114 days.

Answer: (A)

Q50.

Solution

Concept:

Agricultural revolutions are color-coded to identify the sector they transformed. The Silver Revolution was a period of rapid growth in the production of high-protein animal products other than milk.

Solution:

1. Identification: The Silver Revolution refers to the massive increase in the production of Eggs and Poultry meat.
2. Key Figure: Indira Gandhi is often credited with promoting the policies that led to this revolution.
3. Contrast: - White Revolution: Milk. - Yellow Revolution: Oilseeds. - Blue Revolution: Fish. - Silver Fiber Revolution: Cotton (Note the difference between "Silver" and "Silver Fiber").

Final Answer: The Silver Revolution is related to the production of Eggs and Poultry.

Answer: (B)

Answer Key

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	B	2	C	3	A	4	B	5	C
6	B	7	B	8	C	9	A	10	B
11	B	12	C	13	B	14	B	15	C
16	B	17	A	18	C	19	C	20	B
21	B	22	B	23	B	24	B	25	B
26	B	27	A	28	C	29	C	30	B
31	D	32	C	33	B	34	B	35	C
36	B	37	B	38	C	39	A	40	B
41	C	42	D	43	B	44	B	45	B
46	B	47	A	48	B	49	A	50	B