CUET-UG Agriculture Sample Paper-7

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. A breeder is conducting a 'Test Cross' to determine the genotype of a tall pea plant. If the resulting progeny shows a 1 : 1 ratio of tall to dwarf plants, the genotype of the parent plant was:

(A) TT

(B) Tt

(C) tt

(D) $TTtt$

Q2. The 'Ames Test' is a widely used biological assay specifically designed to detect which of the following properties of a chemical substance?

(A) Nutritional value

(B) Mutagenic potential

(C) Rate of biodegradation

(D) Antibiotic resistance

Q3. In agrometeorology, the 'Albedo' of a surface refers to the fraction of solar radiation that is:

(A) Absorbed by the soil

(B) Transmitted through the leaves

(C) Reflected back into the atmosphere

(D) Converted into chemical energy

Q4. Which of the following is the most significant 'Greenhouse Gas' emitted from submerged rice fields due to anaerobic decomposition of organic matter?

(A) CO_2

(B) CH_4

(C) N_2O

(D) SO_2

Q5. The physiological disorder in cauliflower known as 'Whiptail' is a characteristic symptom of the deficiency of:

(A) Boron

(B) Zinc

(C) Molybdenum

(D) Copper

Q6. Which of the following Indian breeds of cattle is renowned for its high 'Heat Tolerance' and resistance to ticks, often used in cross-breeding programs worldwide?

(A) Holstein Friesian

(B) Sahiwal

(C) Jersey

(D) Brown Swiss

Q7. In the context of 'Livestock Diseases', the 'California Mastitis Test' (CMT) is used to detect:

(A) Foot and Mouth Disease

(B) Sub-clinical Mastitis

(C) Anthrax

(D) Brucellosis

Q8. A farmer observes that the older leaves of his maize crop are turning purple. This is a classic deficiency symptom of:

(A) Nitrogen

(B) Phosphorus

(C) Potassium

(D) Magnesium

Q9. Which of the following 'Bio-pesticides' is derived from the Neem tree (*Azadirachta indica*) and acts as an antifeedant and growth regulator for insects?

(A) Rotenone

(B) Pyrethrum

(C) Azadirachtin

(D) Nicotine

Q10. The 'C:N Ratio' of a well-decomposed Farm Yard Manure (FYM) is typically around:

(A) 10 : 1 to 15 : 1

(B) 40 : 1 to 50 : 1

(C) 100 : 1

(D) 5 : 1

Q11. The method of 'Drip Irrigation' was first commercially developed in which country?

(A) USA

(B) Israel

(C) India

(D) Japan

Q12. Which of the following is a 'Non-selective, Contact' herbicide often used for pre-plant desiccation or weed control in non-cropped areas?

(A) Atrazine

(B) Paraquat

(C) 2,4-D

(D) Butachlor

Q13. The 'Grafting' method where the scion is a small branch with several buds and the rootstock is a well-established plant is called:

(A) T-Budding

(B) Whip Grafting

(C) Tongue Grafting

(D) Veneer Grafting

Q14. In fruit preservation, the 'KMS' (Potassium Metabisulphite) acts as a preservative primarily by releasing which gas?

(A) O_2

(B) CO_2

(C) SO_2

(D) N_2

Q15. The 'Lactose' present in milk is a disaccharide composed of:

(A) Glucose + Fructose

(B) Glucose + Galactose

(C) Fructose + Galactose

(D) Glucose + Glucose

Q16. Which of the following is a 'Climacteric' fruit that shows a sharp rise in respiration and ethylene production during the ripening process?

(A) Citrus

(B) Grapes

(C) Banana

(D) Pomegranate

Q17. The process of 'Retting' in Jute production, which involves the biochemical loosening of fibers from the woody stalk, is primarily carried out by the action of:

(A) Aerobic bacteria

(B) Anaerobic bacteria

(C) Fungi

(D) Yeasts

Q18. In the context of 'Organic Farming', which of the following is strictly prohibited for use as a source of nutrients?

(A) Vermicompost

(B) Rock Phosphate

(C) Urea

(D) Neem Cake

Q19. The 'Critical Period' of weed competition in most upland crops like Rice and Maize generally occurs during:

(A) First 10 days after sowing

(B) 20 to 45 days after sowing

(C) At the time of flowering

(D) During the grain filling stage

Q20. A genetic condition where a single gene influences multiple, seemingly unrelated phenotypic traits is known as:

(A) Polyploidy

(B) Pleiotropy

(C) Polycistronic

(D) Polygenic inheritance

Q21. The 'Isolating Distance' maintained during the production of certified seeds of a cross-pollinated crop like Bajra (Pearl Millet) is kept high primarily to prevent:

(A) Mechanical mixture

(B) Genetic contamination via cross-pollination

(C) Spread of seed-borne diseases

(D) Growth of noxious weeds

Q22. Which of the following irrigation methods is characterized by the highest water-use efficiency (up to 90-95%)?

(A) Furrow Irrigation

(B) Sprinkler Irrigation

(C) Drip Irrigation

(D) Border Strip Irrigation

Q23. The protein content in 'Colostrum' (the first milk after calving) is significantly higher than normal milk primarily due to the high concentration of:

(A) Casein

(B) Albumin

(C) Immunoglobulins

(D) Lactose

Q24. In a survey of a farm, the scale used is 1 : 2000. If a boundary measures 5 cm on the map, what is the actual length on the ground?

(A) 10 m

(B) 100 m

(C) 1000 m

(D) 200 m

Q25. Which of the following bio-fertilizers is specifically used for Nitrogen fixation in Lowland (Wetland) Rice cultivation?

(A) Rhizobium

(B) Azotobacter

(C) Azolla

(D) VAM Fungi

Q26. The 'Green Revolution' in India was primarily characterized by the introduction of 'Norin-10' genes. These genes were responsible for which trait in Wheat?

(A) Disease resistance

(B) High protein content

(C) Dwarfing (Short stature)

(D) Drought tolerance

Q27. In 'Precision Farming', the technology used to determine the exact geographical location of a tractor or equipment in the field is:

(A) GIS (Geographic Information System)

(B) GPS (Global Positioning System)

(C) VRT (Variable Rate Technology)

(D) Remote Sensing

Q28. Which of the following is an example of a 'Systemic Herbicide' that is absorbed by the roots or foliage and translocated throughout the plant system?

(A) Paraquat

(B) Glyphosate

(C) Diquat

(D) Propanil

Q29. The 'Curd' in cauliflower is the edible part. Botanically, what is the 'Curd'?

(A) An undeveloped flower bud

(B) A pre-floral fleshy apical meristem

(C) An elongated main stem

(D) A modified root system

Q30. In the 'Laban' method of milk testing, the percentage of which constituent is determined using a Gerber Butyrometer?

(A) Protein

(B) Lactose

(C) Fat

(D) Ash

Q31. The 'Dry Period' in a dairy cow's lactation cycle is the time between:

(A) Calving and first heat

(B) Calving and conception

(C) Cessation of milk production and the next calving

(D) Two consecutive heat periods

Q32. Which plant nutrient is considered 'Mobile' in the plant but 'Immobile' in the soil, leading to deficiency symptoms appearing first on older leaves?

(A) Calcium

(B) Phosphorus

(C) Boron

(D) Iron

Q33. The 'Central Agmark Laboratory' for testing and grading agricultural produce in India is located at:

(A) New Delhi

(B) Nagpur

(C) Mumbai

(D) Bengaluru

Q34. A 'C3' plant differs from a 'C4' plant in that the C3 plant:

(A) Has Kranz anatomy

(B) Possesses high photorespiration

(C) Shows higher water use efficiency

(D) Uses PEP Carboxylase as the primary CO_2 fixer

Q35. The breeding method used to produce a 'Synthetic Variety' involves the crossing of:

(A) Two pure lines

(B) Several inbred lines that have been tested for General Combining Ability (GCA)

(C) A hybrid with its recessive parent

(D) Unrelated wild species

Q36. Which of the following is a primary symptom of 'Zinc' deficiency in Rice, commonly known as 'Khaira' disease?

(A) Yellowing of the leaf tip

(B) Rusty brown spots on the older leaves

(C) Dead hearts and white heads

(D) Downward curling of leaves

Q37. The atmospheric layer where all weather phenomena (clouds, rain, storms) occur is the:

(A) Stratosphere

(B) Troposphere

(C) Mesosphere

(D) Thermosphere

Q38. In a 'Balanced Ration' for livestock, the ratio of concentrates to roughages for a high-yielding dairy cow is generally maintained at:

(A) 10 : 90

(B) 40 : 60

(C) 90 : 10

(D) 100 : 0

Q39. The chemical used for 'Degreening' of citrus fruits and bananas to improve their market appearance is:

(A) Gibberellic Acid

(B) Ethylene (or Ethephon)

(C) Abscisic Acid

(D) Cytokinin

Q40. Which of the following is a 'Short Day Plant' (SDP)?

(A) Wheat

(B) Rice

(C) Barley

(D) Oat

Q41. The 'Base Temperature' (T_{base}) for Rice, below which its physiological activities and growth significantly cease, is generally considered to be:

(A) $5°C$

(B) $10°C$

(C) $15°C$

(D) $20°C$

Q42. Which of the following describes the 'Law of Minimum' proposed by Justus von Liebig?

(A) Plant growth is controlled by the total amount of resources available.

(B) Plant growth is limited by the nutrient that is most deficient relative to the plant's needs.

(C) The increase in crop yield is proportional to the amount of limiting nutrient added.

(D) All nutrients contribute equally to the final yield of the crop.

Q43. The 'Pinching' operation in Marigold cultivation is performed primarily to:

(A) Induce early flowering

(B) Remove diseased leaves

(C) Encourage lateral branching and increase the number of flowers

(D) Reduce the water requirement of the plant

Q44. In DNA replication, the small fragments of DNA produced on the lagging strand are known as:

(A) Cistrons

(B) Introns

(C) Okazaki fragments

(D) Replicons

Q45. Which of the following is a 'Bio-control agent' used specifically to manage the larvae of lepidopteran pests like the Cotton Bollworm?

(A) *Trichoderma harzianum*

(B) *Bacillus thuringiensis* (Bt)

(C) *Rhizobium japonicum*

(D) *Azospirillum*

Q46. The process of 'Homogenization' of milk is carried out to:

(A) Kill all pathogenic bacteria

(B) Increase the vitamin content

(C) Prevent the formation of a cream layer by breaking down fat globules

(D) Separate the whey from the curd

Q47. Which soil structure is generally considered the most desirable for the cultivation of most field crops due to its balanced air-water relationship?

(A) Platy

(B) Prismatic

(C) Crumb or Granular

(D) Massive

Q48. A 'Pure Line' variety is the progeny of a single:

(A) Heterozygous cross-pollinated plant

(B) Homozygous self-pollinated plant

(C) Mutant plant

(D) F1 hybrid

Q49. The 'Yellow Vein Mosaic' (YVM) is a devastating viral disease of which vegetable crop?

(A) Tomato

(B) Brinjal

(C) Okra (Bhindi)

(D) Potato

Q50. In the 'NPK' complex fertilizers, if a bag is labeled 10-26-26, the number 10 represents the percentage of:

(A) Total Nitrogen

(B) Total Phosphorus (P_2O_5)

(C) Total Potassium (K_2O)

(D) Sulfur

Detailed Solutions

Q1.

Solution

Concept: A test cross is a genetic tool used to determine the unknown genotype of an organism expressing a dominant phenotype. The individual in question is crossed with a homozygous recessive (tt) individual. The phenotypic ratio of the offspring reveals whether the parent was homozygous dominant or heterozygous.

Solution: 1. If the tall parent were homozygous dominant (TT), all offspring in a cross with tt would be Tt (100% tall). 2. If the tall parent is heterozygous (Tt), the cross is $Tt \times tt$. 3. The gametes from the parent are T and t, and the gametes from the recessive parent are only t. 4. The resulting offspring genotypes are Tt (tall) and tt (dwarf) in a $1:1$ ratio. 5. Since the progeny shows a $1:1$ ratio, the parent must be heterozygous.

Final Answer: Tt

Answer: (B)

Q2.

Solution

Concept: The Ames test is a biological assay used to assess the mutagenic potential of chemical compounds. Developed by Bruce Ames in the 1970s, it serves as a rapid and cost-effective screen for chemicals that might cause cancer (carcinogens), as most carcinogens are also mutagens.

Solution: 1. The test uses several strains of the bacterium *Salmonella typhimurium* that carry mutations in genes involved in histidine synthesis (they cannot grow without added histidine). 2. The chemical being tested is added to the bacteria on a medium lacking histidine. 3. If the chemical is a mutagen, it will cause "reversions" (mutations that fix the original defect), allowing the bacteria to grow and form colonies. 4. The number of colonies is proportional to the mutagenic strength of the chemical.

Final Answer: Mutagenic potential

Answer: (B)

Q3.

Solution

Concept: Albedo is a measure of the reflectivity of a surface, defined as the ratio of reflected solar radiation to the total incident solar radiation. It is expressed as a decimal or percentage, where 0 represents a perfectly black surface and 1 represents a perfectly white/reflective surface.

Solution: 1. In agriculture and meteorology, albedo determines how much energy the surface (soil or crop canopy) retains. 2. High-albedo surfaces (like fresh snow or light-colored dry sand) reflect most of the solar energy back into the atmosphere, keeping the surface cooler. 3. Low-albedo surfaces (like dark, wet soil or dense green forests) absorb most of the radiation, leading to surface heating. 4. Therefore, albedo specifically quantifies the reflected fraction of solar radiation.

Final Answer: Reflected back into the atmosphere

Answer: (C)

Q4.

Solution

Concept: Greenhouse gases (GHGs) are gases that trap heat in the atmosphere. In agricultural systems, different gases are produced depending on the soil environment. Submerged or waterlogged soils create anaerobic (oxygen-free) conditions that favor specific microbial processes.

Solution: 1. In submerged rice fields, the soil is saturated with water, which cuts off the supply of atmospheric oxygen. 2. Under these anaerobic conditions, specialized bacteria called **methanogens** decompose organic matter. 3. The end product of this specific metabolic pathway is **Methane (CH_4)**. 4. Rice paddies are considered one of the largest anthropogenic sources of atmospheric methane, which has a much higher global warming potential than CO_2 over a 100-year period. 5. While N_2O is also an agricultural GHG, it is primarily associated with fluctuating water tables and nitrogen fertilizer application, rather than the continuous anaerobic decomposition itself.

Final Answer: CH_4

Answer: (B)

Q5.

Solution

Concept: Micro-nutrient deficiencies in plants often lead to specific morphological abnormalities or physiological disorders. In Cole crops like Cauliflower, the availability of certain minerals is highly dependent on soil pH.

Solution: 1. **Whiptail** is a classic physiological disorder in cauliflower caused by the deficiency of **Molybdenum (Mo)**. 2. Molybdenum is essential for the activity of the enzyme nitrate reductase. When it is deficient, the plant cannot process nitrates correctly. 3. The symptoms include the leaf blades becoming severely restricted, distorted, or "thread-like," leaving only the midrib prominent. This gives the leaf a "whip-like" appearance. 4. This deficiency is most common in acidic soils ($pH < 5.5$) because Molybdenum becomes chemically unavailable to the plant at low pH levels. 5. Boron deficiency in cauliflower typically leads to "Hollow Stem" or "Browning."

Final Answer: Molybdenum

Answer: (C)

Q6.

Solution

Concept:

Livestock breeds are classified based on their origin and utility. Exotic breeds (from temperate regions) are often introduced to tropical regions to improve milk yield through cross-breeding, but they lack the natural resistance of indigenous (Zebu) breeds.

Solution:

1. Sahiwal is one of the most prominent indigenous dairy breeds of India, originating from the Montgomery region (now in Pakistan). 2. It is highly valued for its high milk production among Zebu cattle and its exceptional heat tolerance. 3. Due to the presence of a large number of sweat glands and a high surface area-to-volume ratio, it can withstand temperatures that would cause heat stress in exotic breeds like Holstein Friesian. 4. Furthermore, its thick skin provides a natural physical barrier and immunological resistance against common tropical parasites like ticks.

Final Answer: Sahiwal is known for heat tolerance and tick resistance.

Answer: (B)

Q7.

Solution

Concept:

Mastitis is an inflammation of the mammary gland (udder) caused by bacterial infection. It can be clinical (visible symptoms) or sub-clinical (no visible changes in milk or udder).

Solution:

1. Sub-clinical mastitis is difficult to detect visually but causes significant economic losses through reduced milk quality and yield. 2. The California Mastitis Test (CMT) is a rapid, "cow-side" diagnostic tool used to identify this condition. 3. The test involves mixing milk with a reagent that reacts with the DNA of somatic cells (white blood cells) present in the milk. 4. If a high level of somatic cells is present (indicating an infection), the mixture forms a gel-like consistency; the thicker the gel, the more severe the infection.

Final Answer: The CMT is used to detect Sub-clinical Mastitis.

Answer: (B)

Q8.

Solution

Concept:

Nutrient mobility within the plant determines where deficiency symptoms first appear. Mobile nutrients are translocated from older tissues to newer growing points when supply is low.

Solution:

1. Phosphorus is a highly mobile nutrient within the plant system. 2. When the soil is deficient in Phosphorus, the plant moves the nutrient from its older, lower leaves to the younger, developing leaves at the top. 3. As the older leaves lose their Phosphorus, they often develop a characteristic reddish-purple or deep purple pigmentation due to the accumulation of anthocyanin pigments. 4. This symptom is most clearly observed in maize along the leaf margins or throughout the leaf blade of the oldest leaves.

Final Answer: Purple leaves are a symptom of Phosphorus deficiency.

Answer: (B)

Q9.

Solution

Concept:

Bio-pesticides are natural substances derived from plants, animals, or minerals used to control pests. Neem-based products are a cornerstone of Integrated Pest Management (IPM).

Solution:

1. Azadirachtin is the primary active liminoid compound found in the seeds of the Neem tree (*Azadirachta indica*). 2. It acts as an "antifeedant," meaning it makes the plant taste bitter or repellent to insects, causing them to stop feeding. 3. It also acts as an Insect Growth Regulator (IGR) by interfering with the molting hormone (ecdysone), preventing the larvae from transitioning to the next life stage. 4. Unlike synthetic pesticides, it is biodegradable and generally safe for non-target beneficial insects like bees.

Final Answer: The compound is Azadirachtin.

Answer: (C)

Q10.

Solution

Concept:

The Carbon-to-Nitrogen (C:N) ratio is an indicator of the maturity and stability of organic manures. It determines the rate at which organic matter will decompose and release nutrients (mineralization).

Solution:

1. Raw organic materials like wheat straw have a high C:N ratio (100 : 1), meaning they decompose slowly because microbes lack enough nitrogen to build their cells. 2. As decomposition (composting) progresses, carbon is lost as CO_2 while nitrogen is recycled by microbes, causing the ratio to narrow. 3. Well-decomposed Farm Yard Manure (FYM) typically reaches a stable C:N ratio of approximately 10 : 1 to 15 : 1. 4. At this ratio, the manure is in equilibrium with the soil and will release nitrogen into the soil rather than causing "nitrogen robbery" (immobilization).

Final Answer: The typical C:N ratio is 10 : 1 to 15 : 1.

Answer: (A)

Q11.

Solution

Concept:

Drip irrigation, also known as trickle irrigation, is a micro-irrigation system that has the potential to save water and nutrients by allowing water to drip slowly to the roots of plants, either from above the soil surface or buried below the surface.

Solution:

1. The modern development of drip irrigation began in the 1930s, but the first practical and commercial system was developed in **Israel**. 2. An engineer named Simcha Blass and his son Yeshayahu discovered that a large tree growing near a leaking pipe was significantly more robust than others. 3. This led to the creation of the first plastic emitter in 1959, which used friction to slow water flow rather than small holes that clogged easily. 4. Israel's leadership in this technology was driven by its arid climate and the necessity for extreme water conservation in agriculture.

Final Answer: Drip irrigation was commercially developed in Israel.

Answer: (B)

Q12.

Solution

Concept:

Herbicides are classified based on their selectivity and mode of action. Non-selective herbicides kill all plant tissue they come into contact with, while contact herbicides affect only the parts of the plant they touch.

Solution:

1. **Paraquat** is a classic example of a non-selective, contact herbicide. 2. It acts extremely fast by interfering with the electron transport system in photosynthesis, producing superoxide radicals that destroy cell membranes. 3. Because it is a contact herbicide, it does not translocate to the roots; however, because it is non-selective, it is highly effective for "burn-down" of all green vegetation before planting a new crop. 4. It is widely used for weed control in non-cropped areas, orchards, and for desiccation of crops like potato vines.

Final Answer: Paraquat is a non-selective, contact herbicide.

Answer: (B)

Q13.

Solution

Concept:

Veneer grafting is a specialized method of asexual plant propagation commonly used in commercial horticulture for fruit trees like mango.

Solution:

1. In **Veneer Grafting**, a shallow, downward slanting cut (about 2.5 to 4 cm long) is made on the side of the rootstock. 2. A matching cut is made on the scion (a selected shoot from a desirable variety). 3. The scion is then "veneered" or placed against the cut on the rootstock so that the cambium layers of both meet. 4. This method is preferred because it allows for a high success rate even when the weather is not ideal, and if the graft fails, the rootstock remains healthy for a second attempt.

Final Answer: The method described is Veneer Grafting.

Answer: (D)

Q14.

Solution

Concept:

Chemical preservatives are used in food processing to inhibit the growth of spoilage microorganisms and prevent enzymatic browning.

Solution:

1. Potassium Metabisulphite (KMS) is a white crystalline powder commonly used in fruit juices, squashes, and jams. 2. When KMS is added to an acidic fruit juice, a chemical reaction occurs that releases **Sulfur Dioxide (SO_2)**. 3. SO_2 acts as a potent antimicrobial agent by interfering with the cell membranes and enzymes of bacteria and molds. 4. It also preserves the color of the product by acting as an antioxidant, preventing the oxidation of phenolic compounds.

Final Answer: KMS releases SO_2 gas.

Answer: (C)

Q15.

Solution

Concept:

Carbohydrates in milk are primarily in the form of lactose, which is a sugar that provides energy and aids in the absorption of calcium in the gut.

Solution:

1. Lactose is a disaccharide, meaning it is a complex sugar made of two simple sugar molecules (monosaccharides). 2. Through the action of the enzyme lactase, lactose is broken down into its two components: **Glucose** and **Galactose**. 3. Glucose is the primary energy source for cells, while galactose is essential for the development of the central nervous system in young mammals. 4. The concentration of lactose in cow milk is approximately 4.7 to 4.9%.

Final Answer: Lactose is composed of Glucose + Galactose.

Answer: (B)

Q16.

Solution

Concept:

Fruits are categorized based on their physiological behavior during the ripening phase. This classification helps in determining the appropriate harvest time and post-harvest handling strategies.

Solution:

1. **Climacteric fruits** are those that can ripen after being harvested. They exhibit a characteristic burst in respiration (the climacteric rise) and a massive increase in ethylene production at the onset of ripening. 2. Examples of climacteric fruits include Banana, Mango, Papaya, Guava, and Apple. 3. **Non-climacteric fruits**, such as Citrus, Grapes, and Pomegranate, do not show this respiratory burst and must remain on the plant until they are fully ripe to achieve their best quality. 4. Because the banana produces significant ethylene and shows a sharp rise in respiration rate during its transition from green to yellow, it is a primary example of a climacteric fruit.

Final Answer: Banana is a climacteric fruit.

Answer: (C)

Q17.

Solution

Concept:

Retting is a critical post-harvest process in fiber crops like Jute and Flax. It is essentially a controlled fermentation process used to separate the fiber bundles from the non-fiber tissues (woody stalk) of the plant.

Solution:

1. In Jute cultivation, harvested stems are tied into bundles and submerged in slow-moving, clean water for a period of 10 to 15 days. 2. The process is primarily biological. Water-borne microorganisms, specifically **Anaerobic bacteria** (such as *Clostridium* species), thrive in the oxygen-depleted environment under the water. 3. These bacteria secrete enzymes (pectinases and hemicellulases) that dissolve the pectins and other gummy substances that bind the fibers to the stem. 4. Proper retting is essential for obtaining high-quality "golden fiber" with high tensile strength and luster.

Final Answer: The process is primarily carried out by Anaerobic bacteria.

Answer: (B)

Q18.

Solution

Concept:

Organic farming is a production system that sustains the health of soils, ecosystems, and people. It relies on ecological processes, biodiversity, and cycles adapted to local conditions, rather than the use of inputs with adverse effects.

Solution:

1. The fundamental principle of organic farming is the exclusion of all synthetic chemical inputs, including synthetic fertilizers, pesticides, and growth regulators. 2. **Urea** is a concentrated nitrogenous fertilizer produced industrially through the Haber-Bosch process. Since it is a synthetic chemical fertilizer, its use is strictly prohibited in organic certification standards. 3. Vermicompost (earthworm-processed organic waste), Rock Phosphate (a naturally occurring mineral), and Neem Cake (a biological byproduct of neem seeds) are all natural, non-synthetic sources of nutrients and are permitted.

Final Answer: Urea is strictly prohibited in organic farming.

Answer: (C)

Q19.

Solution

Concept:

The "Critical Period of Crop-Weed Competition" is the shortest time span during the crop growth cycle when weeding must be done to prevent the maximum loss in potential yield.

Solution:

1. Weeds compete with crops for light, water, nutrients, and space. If they are not controlled during the initial growth stages, they can overpower the crop. 2. For most upland field crops like Rice and Maize, the first one-third of their total life cycle is the most vulnerable. 3. Empirically, this period typically occurs between **20 to 45 days after sowing (DAS)**. 4. If weeds are removed during this specific window, the crop can usually tolerate any weed growth that occurs later in the season without significant yield reduction.

Final Answer: The critical period generally occurs 20 to 45 days after sowing.

Answer: (B)

Q20.

Solution

Concept:

In genetics, the relationship between genes and the traits they produce is often complex. While many genes influence only one trait, some have a much broader impact on the organism's phenotype.

Solution:

1. **Pleiotropy** is the genetic term for when a single gene or allele influences multiple, seemingly unrelated phenotypic traits. 2. A classic example is the gene for flower color in pea plants, which also affects the color of the seed coat and the presence of reddish spots in the leaf axils. 3. In contrast, **Polygenic inheritance** is when many different genes contribute to a single trait (like height). 4. Pleiotropy is important in plant breeding because selecting for one trait might unintentionally change other traits due to the influence of the same gene.

Final Answer: This genetic condition is known as Pleiotropy.

Answer: (B)

Q21.

Solution

Concept: Isolating distance is the minimum required distance between two plots of the same crop (or related species) to maintain genetic purity by preventing unwanted cross-pollination.
Solution: 1. In cross-pollinated crops like Bajra (Pearl Millet), pollen is primarily carried by the wind. It can travel significant distances from one field to another. 2. If a certified seed plot is located near a commercial field of a different variety, the "foreign" pollen can fertilize the flowers in the seed plot. 3. This results in **Genetic Contamination**, meaning the harvested seeds will no longer be "true-to-type" and will not meet the standards for certified seed. 4. To ensure that the seeds produced possess the exact genetic characteristics of the desired variety, a high isolating distance (often several hundred meters) is strictly enforced.
Final Answer: The distance is maintained to prevent genetic contamination via cross-pollination.

Answer: (B)

Q22.

Solution

Concept: Water-Use Efficiency (WUE) is the ratio of crop yield to the amount of water used. Modern irrigation technologies aim to deliver water precisely to the plant to minimize losses.
Solution: 1. **Drip Irrigation** (also known as trickle irrigation) delivers water directly to the root zone of each individual plant through a network of pipes and emitters. 2. Because water is applied drop by drop, losses due to surface evaporation, runoff, and deep percolation are almost entirely eliminated. 3. This method achieves a water-use efficiency of **90-95%**, which is the highest among all known irrigation systems. 4. For comparison, Sprinkler Irrigation typically reaches 70-80% efficiency, while traditional surface methods like Furrow or Border irrigation are often below 60%.
Final Answer: Drip Irrigation has the highest water-use efficiency.

Answer: (C)

Q23.

Solution

Concept: Colostrum is the "first milk" produced by a mammal after giving birth. It is biologically designed to provide the newborn with essential nutrients and immediate protection against diseases.
Solution: 1. Newborn calves are born with a very weak immune system and are highly susceptible to infections. 2. Colostrum contains a significantly higher total protein content (up to 17-18%) compared to normal milk (approx. 3.5%). 3. The majority of this extra protein consists of **Immunoglobulins** (antibodies). These molecules are absorbed directly through the calf's intestinal wall into the bloodstream. 4. This process provides "passive immunity," protecting the calf until its own immune system becomes fully functional.
Final Answer: The high protein is due to the concentration of Immunoglobulins.

Answer: (C)

Q24.

Solution

Concept: A map scale represents the mathematical relationship between the distance on a map and the actual distance on the ground.

$$\text{Actual Distance} = \text{Map Distance} \times \text{Scale Factor}$$

Solution: 1. The given scale is 1 : 2000, which means that 1 unit on the map is equal to 2000 units on the ground. 2. The measured distance on the map is 5 cm. 3. Calculate the ground distance in centimeters:

$$5 \text{ cm} \times 2000 = 10,000 \text{ cm}$$

4. Convert centimeters to meters (knowing that 100 cm = 1 m):

$$10,000 \div 100 = 100 \text{ meters}$$

Final Answer: The actual length on the ground is 100 m.

Answer: (B)

Q25.

Solution

Concept: Bio-fertilizers utilize living microorganisms to improve soil fertility. In submerged (lowland) rice fields, oxygen is limited, requiring organisms adapted to aquatic environments.

Solution: 1. **Azolla** is a small, free-floating aquatic fern. It maintains a symbiotic relationship with a blue-green alga called *Anabaena azollae*. 2. This alga fixes atmospheric nitrogen and shares it with the fern. 3. When Azolla is grown in rice paddies and later incorporated into the soil, it decomposes and releases nitrogen directly to the rice crop. 4. It is an ideal bio-fertilizer for lowland rice because it thrives in standing water. 5. **Rhizobium** is used for legumes, and **Azotobacter** is typically used for upland non-legume crops.

Final Answer: Azolla is used for Nitrogen fixation in Lowland Rice.

Answer: (C)

Q26.

Solution

Concept: The "Green Revolution" involved developing High-Yielding Varieties (HYVs) that could respond to heavy fertilization without falling over. This required a genetic change in the height of the plant.

Solution: 1. Traditional wheat varieties were tall and had weak stems. When farmers applied more water and fertilizer, the plants became top-heavy and fell over (a process called lodging), which ruined the crop. 2. The **Norin-10** gene, sourced from a Japanese variety, was introduced into Indian wheat by scientists like Dr. M.S. Swaminathan and Dr. Norman Borlaug. 3. This gene is specifically a **Dwarfing gene**. It reduced the internode length of the wheat plant, resulting in a short, sturdy stature. 4. Because the plants were shorter, they did not lodge and could direct more of their energy and nutrients into grain production instead of straw growth, leading to massive yield increases.

Final Answer: The genes were responsible for Dwarfing (Short stature).

Answer: (C)

Q27.

Solution

Concept: Precision farming (or satellite farming) uses technology to ensure that crops and soil receive exactly what they need for optimum health and productivity.

Solution: 1. In precision agriculture, it is essential to know the exact position of a vehicle or a sensor in the field to apply inputs (like fertilizer or water) site-specifically. 2. The **Global Positioning System (GPS)** is the primary technology used for this purpose. It uses a network of satellites to provide precise coordinate data (latitude and longitude) to a receiver on the tractor. 3. **GIS** (Geographic Information System) is used to analyze and visualize the data, but the actual "locating" is done by GPS. 4. **VRT** (Variable Rate Technology) is the hardware that uses GPS data to change the rate of application on the go.

Final Answer: GPS is the technology used to determine exact geographical location.

Answer: (B)

Q28.

Solution

Concept: Herbicides are classified by their "mobility" within the plant. Systemic herbicides are translocated through the plant's vascular system, allowing them to kill the entire plant, including the roots.

Solution: 1. **Glyphosate** is a broad-spectrum, non-selective, systemic herbicide. 2. When applied to the leaves, it is absorbed and moved (translocated) through the phloem to the growing points (meristems) of the plant and into the root system. 3. It works by inhibiting a specific enzyme (EPSPS) involved in the synthesis of essential amino acids. 4. Because it is systemic, it is highly effective against deep-rooted perennial weeds. In contrast, **Paraquat** and **Diquat** are contact herbicides that only kill the green tissue they touch.

Final Answer: Glyphosate is an example of a systemic herbicide.

Answer: (B)

Q29.

Solution

Concept: In horticulture, many "vegetables" are botanically modified parts of the plant, such as roots, stems, leaves, or immature flowers.

Solution: 1. The edible white part of the cauliflower (*Brassica oleracea var. botrytis*) is called the "curd." 2. Botanically, the curd is a **pre-floral fleshy apical meristem**. This means it is a mass of undeveloped, immature flower buds and thickened, fleshy stems that have not yet branched out into flowers. 3. If the cauliflower is not harvested, the curd eventually "bolts," meaning the stems elongate and the buds develop into actual yellow flowers. 4. This is different from Broccoli, where the edible parts are the actual immature green flower buds.

Final Answer: The curd is a pre-floral fleshy apical meristem.

Answer: (B)

Q30.

Solution

Concept: The Gerber Method is the standard industrial test used to determine the fat content of milk. It is a volumetric method based on the principle of centrifugal separation.

Solution: 1. In the Gerber test, a specialized glass tube called a **Butyrometer** is used. 2. Milk is mixed with sulfuric acid and amyl alcohol. The acid digests the milk proteins (casein) and releases the fat, while the amyl alcohol helps in the clear separation of the fat layer. 3. The mixture is centrifuged, and the **Fat** (being lighter than the rest of the mixture) accumulates in the graduated neck of the butyrometer. 4. The fat percentage is then read directly from the scale on the neck. This is the most critical test for determining the economic value of milk.

Final Answer: The Gerber Butyrometer is used to determine the percentage of Fat.

Answer: (C)

Q31.

Solution

Concept: The "Dry Period" is a vital management phase in dairy husbandry that allows the mammary glands of the animal to rest and regenerate before the next lactation cycle begins.

Solution: 1. Continuous milking without a break puts immense physiological stress on a cow. A rest period is necessary to allow the milk-secreting tissues (alveoli) to repair and for the animal to replenish its body reserves of calcium and phosphorus. 2. The dry period officially starts when the farmer intentionally stops milking the cow (known as "drying off") and ends when the cow gives birth to her next calf (calving). 3. The ideal duration for this period is **60 days**. 4. If a cow is not given a sufficient dry period, her milk production in the following lactation can drop by as much as 20–25% because the mammary glands haven't fully recovered.

Final Answer: The dry period is the time between the cessation of milk production and the next calving.

Answer: (C)

Q32.

Solution

Concept: Nutrient mobility within the plant determines the spatial distribution of deficiency symptoms. If a nutrient is "mobile," the plant can relocate it from older tissues to meet the needs of new growth.

Solution: 1. **Phosphorus (P)** is a highly mobile nutrient within the plant. When the soil cannot supply enough, the plant "cannibalizes" phosphorus from its older, lower leaves and transports it to the growing tips and young leaves. 2. Consequently, the **older leaves** show deficiency symptoms (like purpling) first, while the young leaves remain green. 3. In the soil, however, Phosphorus is **immobile**. It binds strongly to soil particles (fixation) and does not move easily toward the roots via water (leaching), which is why it must be placed near the root zone. 4. Nutrients like Calcium and Boron are immobile in the plant, so their deficiency appears first on the youngest leaves/buds.

Final Answer: Phosphorus is mobile in the plant and immobile in the soil.

Answer: (B)

Q33.

Solution

Concept: Agmark is a certification mark for agricultural produce in India. The Directorate of Marketing and Inspection (DMI) maintains laboratories to ensure that products meet specified quality standards.

Solution: 1. The **Central Agmark Laboratory (CAL)** is the apex body responsible for defining the standards and performing the final analysis of agricultural commodities under the Agmark scheme. 2. While there are many Regional Agmark Laboratories across India, the Central Laboratory is located in **Nagpur, Maharashtra**. 3. This facility handles the most complex testing and acts as the legal referee for quality disputes regarding the "Agmark" seal.

Final Answer: The Central Agmark Laboratory is located at Nagpur.

Answer: (B)

Q34.

Solution

Concept: Photorespiration is a light-dependent process where the enzyme RuBisCO consumes oxygen and releases CO_2. It is considered an energetically "wasteful" process because it undoes the work of photosynthesis.

Solution: 1. **C3 plants** (e.g., Wheat, Rice, Soybeans) use the Calvin cycle for CO_2 fixation. At high temperatures or low CO_2 levels, RuBisCO starts acting as an oxygenase, leading to **high photorespiration** rates. 2. **C4 plants** (e.g., Maize, Sugarcane) have evolved a special "Kranz Anatomy" and a CO_2-concentrating mechanism using the PEP Carboxylase enzyme. 3. This mechanism ensures that RuBisCO is always surrounded by high CO_2 levels, effectively suppressing photorespiration. 4. Therefore, high photorespiration is a defining drawback of C3 plants that C4 plants have managed to overcome.

Final Answer: C3 plants possess high photorespiration.

Answer: (B)

Q35.

Solution

Concept: A synthetic variety is a population produced by crossing a set of selected genotypes (inbred lines or clones) that have been specifically tested for their ability to combine well with one another.

Solution: 1. The key to a successful synthetic variety is **General Combining Ability (GCA)**. Breeders test many inbred lines and select only those that produce high-performing offspring when crossed with a wide variety of other lines. 2. These selected lines are then allowed to inter-pollinate (cross) in all possible combinations. 3. Unlike hybrids, where farmers must buy new seeds every year, seeds from synthetic varieties can be saved and replanted for 2–3 generations because the genetic diversity within the population maintains a high level of vigor.

Final Answer: It involves crossing several inbred lines tested for GCA.

Answer: (B)

Q36.

Solution

Concept: 'Khaira' is a nutritional disorder in rice discovered in 1966 at Pantnagar, India. It is one of the most widespread micronutrient deficiencies in Indian rice soils.

Solution: 1. Khaira disease is caused by the deficiency of **Zinc (Zn)**. This usually occurs in soils with high pH (calcareous soils) or where intensive cropping has depleted micronutrient levels. 2. The symptoms typically appear in the nursery or within 2–3 weeks after transplanting. 3. The most characteristic symptom is the appearance of **rusty brown or bronze-colored spots** on the older leaves. 4. As the deficiency progresses, these spots coalesce, and the leaves may dry up. The plant exhibits stunted growth and poor root development. 5. It is effectively managed by applying Zinc Sulphate ($ZnSO_4$) to the soil or as a foliar spray.

Final Answer: The symptom is rusty brown spots on the older leaves.

Answer: (B)

Q37.

Solution

Concept: The Earth's atmosphere is divided into several layers based on temperature changes. The lowest layer is where life exists and where the air is densest.

Solution: 1. The **Troposphere** extends from the Earth's surface to an average height of about 12 km (8 km at poles and 18 km at the equator). 2. Almost all water vapor and dust particles in the atmosphere are concentrated in this layer. 3. Because of the presence of water vapor and the rapid cooling of air as it rises (lapse rate), **all weather phenomena**—including cloud formation, rainfall, lightning, and storms—occur exclusively in the Troposphere. 4. The layer above it, the Stratosphere, is much more stable and contains the ozone layer, which is why commercial jets often fly there to avoid weather disturbances.

Final Answer: All weather phenomena occur in the Troposphere.

Answer: (B)

Here are the detailed solutions for your requested questions, formatted strictly according to your LaTeX template.

Q38.

Solution

Concept: A balanced ration for livestock must provide all necessary nutrients in the correct proportions to meet the animal's maintenance and production needs. It consists of two main components: roughages (high fiber, low energy) and concentrates (low fiber, high energy/protein).

Solution: 1. For high-yielding dairy cows, the energy demand for milk production is exceptionally high and cannot be met by roughages alone due to their high bulk and low energy density. 2. Concentrates are added to increase the energy density of the diet. However, a minimum amount of roughage is essential to maintain rumen health and prevent metabolic disorders like acidosis. 3. For a high-yielding cow, a common and effective ratio is roughly 40% concentrates and 60% roughages on a dry matter basis. 4. This balance ensures the cow receives enough energy for milk production while retaining enough fiber to facilitate proper rumination and digestion.

Final Answer: 40 : 60

Answer: (B)

Q39.

Solution

Concept: Degreening is a post-harvest treatment used to improve the cosmetic appeal of fruits, particularly citrus and bananas. It involves the breakdown of green chlorophyll pigments in the skin to reveal the underlying yellow or orange pigments.

Solution: 1. In many tropical regions, citrus fruits reach internal maturity (correct sugar-to-acid ratio) while the peel remains green due to warm nighttime temperatures. 2. Ethylene gas (or its liquid form, Ethephon) is a natural plant hormone that triggers the ripening process and the degradation of chlorophyll. 3. When exposed to controlled concentrations of ethylene in degreening chambers, the green color of the fruit disappears, making it more visually appealing to consumers. 4. It is important to note that degreening primarily affects the external color and does not significantly change the internal eating quality of the fruit.

Final Answer: Ethylene (or Ethephon)

Answer: (B)

Q40.

Solution

Concept: Photoperiodism is the physiological reaction of organisms to the length of day or night. Short Day Plants (SDP) are those that flower only when the day length is shorter than a specific critical threshold (or more accurately, when the period of darkness exceeds a critical length).

Solution: 1. Rice is a classic example of a Short Day Plant. It typically initiates its reproductive phase (flowering) when the days become shorter in the late summer or autumn. 2. Most Kharif season crops in India, including Rice and Soybeans, follow this pattern. 3. In contrast, Wheat, Barley, and Oats are Long Day Plants (LDP). These crops require longer days (typical of the spring and early summer) to transition from vegetative growth to flowering. 4. Therefore, among the given options, Rice is the only Short Day Plant.

Final Answer: Rice

Answer: (B)

Q41.

Solution

Concept: Base temperature (T_{base}), also known as the threshold temperature, is the minimum temperature required for a plant to sustain its metabolic processes and growth. When the ambient temperature falls below this value, the enzymatic activities responsible for physiological development slow down or cease entirely. This value is essential for calculating Growing Degree Days (GDD).

Solution: 1. Different crops have different base temperatures depending on their origin and adaptation. Tropical and sub-tropical crops (like Rice and Maize) typically have higher base temperatures than temperate crops (like Wheat or Barley). 2. For **Rice**, which is a warm-season crop, the base temperature is widely accepted in agricultural science as **$10^{\circ}C$**. 3. If temperatures drop below $10^{\circ}C$, rice plants may experience chilling injury, stunted growth, and failure to flower or fill grains. 4. In contrast, temperate crops like Wheat have a much lower base temperature, usually around $4.5^{\circ}C$ to $5^{\circ}C$, allowing them to grow during cooler seasons.

Final Answer: $10^{\circ}C$

Answer: (B)

Q42.

Solution

Concept: Liebig's Law of the Minimum is a fundamental principle in agricultural science. It states that the yield of a crop is limited by the single nutrient or environmental factor that is in the shortest supply relative to the plant's requirement, even if all other essential factors are abundant.

Solution: 1. This concept is often illustrated by "Liebig's Barrel," where each stave of the barrel represents a different nutrient (Nitrogen, Phosphorus, Potassium, etc.). 2. The water level in the barrel represents the crop yield. No matter how long the other staves are, the water can only rise to the height of the shortest stave. 3. Therefore, plant growth is not determined by the total amount of resources available, but specifically by the scarcest one (the limiting factor). 4. Option (C) refers to Mitscherlich's Law of Diminishing Returns, which is a different principle regarding yield increments.

Final Answer: Plant growth is limited by the nutrient that is most deficient relative to the plant's needs.

Answer: (B)

Q43.

Solution

Concept: Pinching is a cultural practice in horticulture, particularly in floriculture and landscaping, that involves the removal of the terminal growing tip of a plant to overcome apical dominance.
Solution: 1. The apical bud (top tip) of a plant produces auxins that inhibit the growth of axillary or lateral buds. This is why plants naturally tend to grow tall and spindly. 2. By **pinching** (removing) the terminal bud, the source of auxin is removed, allowing the lateral buds to break and grow. 3. In Marigold, this results in a bushier, more compact plant with many side branches. 4. Since flowers are produced on the tips of branches, increasing the number of lateral branches directly increases the total number of flowers per plant.
Final Answer: Encourage lateral branching and increase the number of flowers

Answer: (C)

Q44.

Solution

Concept: DNA replication is semi-discontinuous because the two strands of the DNA double helix are antiparallel, and the enzyme DNA polymerase can only synthesize new DNA in one direction (5′ to 3′).
Solution: 1. As the replication fork opens, the "leading strand" is synthesized continuously toward the fork. 2. The other strand, the "lagging strand," must be synthesized in the opposite direction (away from the fork). 3. Because of this, the lagging strand is created in short, discrete segments rather than one long continuous piece. 4. These small segments are known as **Okazaki fragments**. They are later joined together by the enzyme DNA ligase to form a complete, continuous strand of DNA.
Final Answer: Okazaki fragments

Answer: (C)

Q45.

Solution

Concept: Biological control (Bio-control) is a method of controlling pests such as insects, mites, weeds, and plant diseases using other organisms. It relies on predation, parasitism, herbivory, or other natural mechanisms. *Bacillus thuringiensis* (Bt) is a globally utilized microbial bio-control agent specifically effective against certain insect orders.

Solution: 1. ***Bacillus thuringiensis* (Bt)** is a gram-positive, soil-dwelling bacterium. During its sporulation phase, it produces intracellular protein crystals known as "cry toxins" or "endotoxins." 2. When the larvae of lepidopteran insects (such as the Cotton Bollworm, tobacco budworm, or diamondback moth) ingest these crystals, the alkaline environment of their midgut activates the toxins. 3. The activated toxins bind to specific receptors in the gut wall, creating pores that cause the gut to leak, leading to the death of the larvae by septicemia or starvation. 4. For comparison: - *Trichoderma harzianum* is a bio-fungicide used to control soil-borne fungal pathogens. - *Rhizobium* and *Azospirillum* are bio-fertilizers used for nitrogen fixation, not pest control.

Final Answer: Bacillus thuringiensis (Bt)

Answer: (B)

Q46.

Solution

Concept: Milk is an emulsion of fat in water. The fat exists as large globules that naturally tend to separate and rise to the surface due to the difference in density between fat and the milk serum.

Solution: 1. **Homogenization** is a mechanical treatment where milk is passed through a valve at very high pressure (approx. 2000 to 2500 psi). 2. This process breaks down the large fat globules into extremely small particles (usually less than 2 microns). 3. These smaller particles have a much larger surface area and are much lighter, which prevents them from clustering together and rising. 4. Consequently, the fat remains uniformly distributed throughout the milk, preventing the formation of a "cream line" or "cream layer" on top.

Final Answer: To prevent the formation of a cream layer by breaking down fat globules.

Answer: (C)

Q47.

Solution

Concept: Soil structure refers to the arrangement and organization of primary soil particles (sand, silt, and clay) into secondary units called aggregates or peds. The shape of these peds determines the pore space, which governs the movement of air and water—the two most critical factors for root respiration and nutrient uptake.

Solution: 1. **Crumb and Granular** structures consist of spherical or sub-spherical aggregates that do not fit closely together. This creates a high proportion of "macro-pores" (allowing for rapid drainage and aeration) and "micro-pores" (allowing for water retention). 2. **Platy** structures have horizontal plates that overlap, severely restricting the downward movement of water and root penetration. 3. **Prismatic** and **Columnar** structures are typically found in lower soil horizons and can limit vertical air-water exchange. 4. **Massive** structure lacks any observable aggregation (like a solid block of clay), leading to poor drainage and limited space for air. 5. Because granular/crumb structures provide the best balance of drainage, aeration, and moisture storage, they are considered the ideal "tilth" for most agricultural crops.

Final Answer: Crumb or Granular

Answer: (C)

Q48.

Solution

Concept: The "Pure Line Theory" was proposed by W.L. Johannsen in 1903. A pure line is a population of plants that are genetically identical and homozygous, meaning they will produce offspring with the exact same traits generation after generation if self-pollinated.

Solution: 1. A pure line is developed by selecting a single **homozygous** (having identical alleles for a trait, e.g., *TT* or *tt*) plant from a **self-pollinated** crop. 2. Because the plant is homozygous and self-pollinating, all gametes produced are identical, and no new genetic combinations are introduced. 3. Therefore, the entire progeny of that single plant remains genetically uniform. 4. If the parent were heterozygous (Option A), the offspring would segregate (show different traits), and if it were an F1 hybrid (Option D), it would also show massive genetic variation in the next generation.

Final Answer: Homozygous self-pollinated plant

Answer: (B)

Q49.

Solution

Concept: Yellow Vein Mosaic (YVM) is a highly destructive viral disease that affects crops in the Malvaceae family. It is characterized by clear, yellow chlorosis of the veins, leading to significant yield loss and poor fruit quality.

Solution: 1. **Okra (Bhindi)**, or *Abelmoschus esculentus*, is the primary host of the Yellow Vein Mosaic Virus (YVMV). 2. The virus is transmitted by a whitefly vector (*Bemisia tabaci*). 3. Symptoms begin with the yellowing of the veins and veinlets, followed by the entire leaf blade turning yellow. 4. The resulting fruits become small, yellowish-white, and fibrous, making them unmarketable. 5. Controlling the disease relies heavily on managing the whitefly population and using resistant varieties.

Final Answer: Okra (Bhindi)

Answer: (C)

Q50.

Solution

Concept: Commercial fertilizers are labeled with a standardized three-number code, known as the N-P-K rating. This rating indicates the percentage by weight of the three primary macronutrients essential for plant growth.

Solution: 1. The three numbers always follow a fixed sequence: **N-P-K**. 2. **N** stands for Total Nitrogen. 3. **P** stands for available Phosphorus, expressed as the oxide form P_2O_5. 4. **K** stands for soluble Potassium, expressed as the oxide form K_2O. 5. In a **10-26-26** grade bag, the first number **10** represents **10% Total Nitrogen**. The subsequent numbers represent 26% P_2O_5 and 26% K_2O respectively.

Final Answer: Total Nitrogen

Answer: (A)

Answer Key

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