

Q1. Which crop has the Botanical name *Oryza sativa*?

- (a) Rice
- (b) Wheat
- (c) Gram
- (d) Pea
- (e) Maize

Q2. What is the uniform premium rate for all Rabi crops as per PMFBY?

- (a) 1.5%
- (b) 2%
- (c) 3%
- (d) 5%
- (e) 4%

Q3. Pungency in Onion due to which Compound?

- (a) Allyl propyl disulphide
- (b) Di allyl Di Sulphide
- (c) Isothiocyanate
- (d) Memordicocite
- (e) Anthocyanin

Q4. Blossom end rot is problem in _____ due to deficiency of _____.

- (a) Tomato; B
- (b) Cauliflower; Ca
- (c) Cauliflower; B
- (d) Tomato; Ca
- (e) None of these

Q5. Effluent Treatment of Pond required for?

- (a) Reduce the organic content and remove pathogens from Pond.
- (b) Increase the organic content and add pathogens from Pond.
- (c) Reduce oxygen in pond
- (d) Increase CO₂ in pond
- (e) None of these

Q6. As per the PFA, SNF in cow milk is?

- (a) 8.0%
- (b) 9.0%
- (c) 8.5%
- (d) 9.5%
- (e) None of these

Q7. Piercing and sucking mouth parts found in which Order?

- (a) Coleoptera
- (b) Isoptera
- (c) Lepidoptera
- (d) Orthoptera
- (e) Hemiptera

Q8. The superiority of F₁ hybrid in one or more characters over its parents is known as?

- (a) Heterosis
- (b) Back cross
- (c) Test cross
- (d) top cross
- (e) None of these

Q9. ICMR recommendation of vegetables in grams is?

- (a) 400 gram
- (b) 500 gram
- (c) 300 gram
- (d) 200 gram
- (e) 100 gram

Q10. In Which scheme farmer get Rs.6000 direct support by the government annually?

- (a) PMEBY
- (b) e-NAM
- (c) KCC
- (d) PM-Kisan
- (e) RMMSY

Q11. Pendimethalin is used against?

- (a) Nematode
- (b) Bacteria
- (c) Fungus
- (d) Virus
- (e) Weeds

Q12. Act of Parturition of sow is called?

- (a) Calving
- (b) Farrowing
- (c) Lambing
- (d) Kidding
- (e) None of these

Q13. RM (Reichert - Meissl Number) test is done to check purity of?

- (a) Butter
- (b) Skimmed milk
- (c) Toned milk
- (d) Ghee
- (e) Khoa

Q14. Water holding capacity in descending order is-

- (a) Sand > Silt > clay
- (b) Silt < Clay < Sand
- (c) Clay > Silt > Sand
- (d) Clay < Silt < Sand
- (e) Sand < clay < silt

Q15. Symptoms of Powdery mildew of pea first appears on?

- (a) Pod
- (b) Leaves
- (c) Stem
- (d) flower
- (e) Roots

Q16. Family of Mustard is?

- (a) Graminae
- (b) Leguminaceae
- (c) Cucurbitaceae
- (d) Cruciferae
- (e) Solanaceae

Q17. Process which softens the seed coat to water and gas is?

- (a) Stratification
- (b) Scarification
- (c) Vaccination
- (d) Vaculization
- (e) None of these

Q18. Protein present in silk is-

- (a) Collagen
- (b) Keratin
- (c) Sericin
- (d) Oryzein
- (e) Albumin

Q19. Process of separation of silk from cocoon is called?

- (a) Rabbing
- (b) Arrowing
- (c) Stiffling
- (d) Reeling
- (e) None of the above

Q20. Anthareae mylitta is?

- (a) Temperate tassar
- (b) Temperate muga
- (c) Tropical muga
- (d) Tropical tassar
- (e) Eri

Q21. Retting is a process of which crop?

- (a) Gram
- (b) Jute
- (c) Tobacco
- (d) Potato
- (e) Rice

Q22. Fruit of rose is known as?

- (a) Hips
- (b) Capsule
- (c) Pods
- (d) Drupe
- (e) Berry

Q23. Which of the following chemical is used for polyploidy breeding?

- (a) X-ray
- (b) GA₃
- (c) Colchicin
- (d) Acridine dyes
- (e) Auxin

Q24. Fruit of Pineapple Known as?

- (a) Pome
- (b) Berry
- (c) Drupe
- (d) Sorosis
- (e) Pepo

Q25. The credit for success of KVK goes to?

- (a) Mohan Singh Mehta
- (b) Mangla Rai
- (c) Dr. R. S. Paroda
- (d) Balwant Mehta
- (e) Chandrika Prasad

Q26. Which buffalo breed is from Gujarat and have sickle shaped horn?

- (a) Bhadavari
- (b) Murrah
- (c) Surati
- (d) Mehsana
- (e) Nili ravi

Q27. Reclamation of alkali soils can be done by using?

- (a) Gypsum
- (b) Rock Sulphate
- (c) SSP
- (d) Lime
- (e) None of these

Q28. The vector of Japanese encephalitis virus is?

- (a) Pig
- (b) Mosquito
- (c) Cow
- (d) Goat
- (e) Sheep

Q29. Mandi is a _____ type of market?

- (a) Primary
- (b) Fair
- (c) Secondary
- (d) Tertiary
- (e) None of these

Q30. Cross of two different breeds alternatively is called _____.

- (a) Criss-cross
- (b) Back cross
- (c) Test cross
- (d) Out cross
- (e) Close breeding

Q31. Mayer published a paper in 1886 on the disease, which he named "Mosaic disease of Which Crop", and described its symptoms in detail.?

- (a) Tobacco
- (b) Tomato
- (c) Potato
- (d) Banana
- (e) Papaya

Q32. What is smother crop?

- (a) Rapidly growing Crop that is used to suppress or stop the growth of Weed
- (b) Rapidly growing Weed that is used to suppress or stop the growth of Crop
- (c) A Variety of Cereals That Grow Slowly
- (d) A Variety of Cereals That Grow Faster
- (e) None of these

Q33. Late blight is the disease of?

- (a) Potato
- (b) Tobacco
- (c) Wheat
- (d) Chili
- (e) None of these

Q34. Pre seasonal planting of sugarcane followed in Maharashtra and Karnataka

- (a) July-August
- (b) Nov.-Dec.
- (c) May-June
- (d) Sep.-Oct
- (e) January-February

Q35. Who recommends the MSP and issue prices?

- (a) Ministry of agriculture
- (b) NAFED
- (c) NABARD
- (d) Commission for Agricultural cost & prices
- (e) Agmark

Q36. Mould board instrument used for?

- (a) Ploughing
- (b) Weeding
- (c) Harrowing
- (d) Levelling
- (e) None of these

Q37. Soil moisture is measured by which instrument?

- (a) Tensiometer
- (b) Anemometer
- (c) Auxanometer
- (d) Manometer
- (e) Potometer

Q38. Which is European bee?

- (a) Apis mellifera
- (b) Apis Dorsata
- (c) Apis Cerana
- (d) Apis Mellipona
- (e) None of these

Q39. 2-4 D used as?

- (a) Herbicide
- (b) Insecticide
- (c) Pesticides
- (d) Bio-Pesticide
- (e) None of these

Q40. Which one is not sedimentary rock?

- (a) Granite
- (b) lime stone
- (c) Sand stone
- (d) Dolomite
- (e) None of these

Q41. Buffalo milk is whiter than cow milk Why?

- (a) beta-carotene pigment gets converted to colorless Pigment
- (b) It contains more fat
- (c) It contains no lactose
- (d) It contains more calcium
- (e) None of these

Q42. Scratching, rubbing and softening seed coat to make it permeable for water and _____?

- (a) Stratification
- (b) Scarification
- (c) Roughing
- (d) Cleaning
- (e) None of these

Q43. Tree + crop + pasture Known as?

- (a) Agrisilvopastural system
- (b) Silviculture
- (c) Horti-pastural
- (d) Agri-Horti-pastural
- (e) Agri-Silviculture

Q44. What is zoonosis?

- (a) Diseases transfer animals to humans
- (b) Diseases transfer human to animal
- (c) Diseases transfer bird to animal
- (d) Diseases transfer human to bird
- (e) None of these

Q45. Fat globule break in uniform size?

- (a) Homogenization
- (b) Sterilization
- (c) Pasturization
- (d) Calcification
- (e) None of these

Q46. Anammox is one of the steps of?

- (a) N Cycle
- (b) H Cycle
- (c) C Cycle
- (d) S Cycle
- (e) None of these

Q47. The off-type crop varieties in main crop known as?

- (a) Rouging
- (b) Weeding
- (c) Isolating
- (d) Hoeing
- (e) None of these

Q48. In Pomegranate disorder that cannot be identified externally, whereas the arils become soft, light creamy-brown to dark blackish-brown and unfit for consumption.?

- (a) Internal breakdown of Pomegranate
- (b) Cracking
- (c) Fruit Sucking moth
- (d) External breakdown
- (e) None of these

Q49. Parallel and anti-Parallel lines in DNA helix is connected with which bond?

- (a) Hydrogen bond
- (b) Covalent
- (c) Phosphate bond
- (d) Carbon bond
- (e) None of these

Q50. Sugarcane ratooning compared to pure crop?

- (a) More N required
- (b) Less N required
- (c) More P required
- (d) More K required
- (e) None of these

Q51. In Maharashtra Karnatak, and AP Grape Wines are pruned twice in month of ____ and ____?

- (a) Feb-March and Nov-Dec
- (b) April-May and Oct. - Nov
- (c) June-July and Sep.-Oct.
- (d) Jan-Feb and Aug-Sep
- (e) None of these

Q52. Secretion of milk by glandular secretory tissue of milk animals & their collection in the various system terminating its let down - specific stimuli?

- (a) Lactation
- (b) Secretion
- (c) Homogenization
- (d) Flushing
- (e) None of these

Q53. Coconut beetle?

- (a) Rhinoceros beetle
- (b) Red palm Weevil
- (c) Coconut mite
- (d) Black headed Caterpillar
- (e) None of these

Q54. Which seed is progeny of breeder seed?

- (a) Foundation seed
- (b) Breeder seed
- (c) Registered seed
- (d) Certified seed
- (e) Nucleus seed

Q55. Bordeaux mixture contains?

- (a) Cu
- (b) S
- (c) P
- (d) Ca
- (e) B

Q56. Continuous seed sowing in row and covered by soil?

- (a) Drilling
- (b) Dibbling
- (c) Broadcasting
- (d) Hill dropping
- (e) Check row planting

Q57. Milk fever is caused due to the deficiency of?

- (a) Ca
- (b) Zn
- (c) B
- (d) Cu
- (e) N

Q58. Which of the following housing system is used in commercial layer farming cage system in poultry having dimensions 14 × 16 inches or 17 inches?

- (a) Battery Method
- (b) Cage System
- (c) Double Cage System
- (d) Light Method
- (e) None of these

Q59. The principle of this technique is the generation of nitrogen cycle by maintaining higher C: N ratio through stimulating heterotrophic microbial growth, which assimilates the nitrogenous waste that can be exploited by the cultured species as a feed?

- (a) Bio floc fish farming
- (b) Integrated fish farming
- (c) Composite fish farming
- (d) Marine fish farming
- (e) Inland fish farming

Q60. When hybrid by protoplasmic fusion two different species/Varieties known as?

- (a) Intra-specific hybridization
- (b) Inter – Specific hybridization
- (c) Intra-generic hybridization
- (d) Inter generic hybridization
- (e) Somatic hybridization

Solutions

S1. Ans.(a)

Sol. *Oryza sativa* is the scientific name for cultivated rice, a staple food for a significant portion of the world's population. This grain crop is a major source of nutrition and calories, especially in many Asian countries where it is a dietary staple.

S2. Ans.(a)

Sol. The uniform premium rate for all Rabi (winter) crops under the Pradhan Mantri Fasal Bima Yojana (PMFBY) is 1.5%. This rate represents the percentage of the sum insured that farmers need to pay as a premium to avail crop insurance coverage for their Rabi crops. The PMFBY is a government-sponsored crop insurance scheme in India aimed at providing financial protection to farmers against crop yield losses due to various natural calamities.

S3. Ans.(a)

Sol. The pungency in onions is primarily due to the presence of Allyl propyl disulphide. When onions are cut or crushed, enzymes present in the onion cells convert amino acids into sulfenic acid, which then spontaneously rearranges to form compounds like syn-Propanethial S-oxide. This volatile compound is responsible for the characteristic pungent odor and taste associated with onions.

S4. Ans.(d)

Sol. Blossom end rot is a problem in **Tomato** due to the deficiency of **Calcium (Ca)**. Blossom end rot is a physiological disorder that occurs in tomatoes when there is an inadequate supply of calcium to developing fruit tissues. Calcium is essential for cell wall structure, and its deficiency leads to the characteristic symptoms of dark, leathery lesions on the blossom end of the tomato fruit.

S5. Ans.(a)

Sol. Effluent treatment of a pond is required to (a) reduce the organic content and remove pathogens from the pond. This process aims to improve water quality by eliminating excess organic matter and harmful pathogens, ensuring a healthier aquatic environment. Effluent treatment is crucial for maintaining the ecological balance of the pond, promoting the well-being of aquatic life, and preventing issues such as oxygen depletion and disease outbreaks.

S6. Ans.(c)

Sol. As per the Prevention of Food Adulteration (PFA) standards, the Solid Not Fat (SNF) content in cow milk is 8.5%. SNF represents the total non-fat components in milk, including proteins, lactose, and minerals.

S7. Ans.(e)

Sol. The piercing and sucking mouthparts are found in the Order Hemiptera. Hemipterans, commonly known as true bugs, exhibit mouthparts adapted for piercing and sucking fluids from plants or other organisms. These specialized mouthparts allow them to feed on sap, blood, or other fluids. Examples of hemipterans include aphids, cicadas, and bedbugs.

S8. Ans.(a)

Sol. The superiority of F₁ hybrid in one or more characters over its parents is known as heterosis. Heterosis, also referred to as hybrid vigor, is the phenomenon where the hybrid offspring (F₁ generation) exhibits enhanced traits or performance compared to its parents.

S9. Ans.(c)

Sol. The ICMR (Indian Council of Medical Research) recommends the consumption of vegetables in the amount of 300 grams. This recommendation emphasizes the importance of incorporating a sufficient quantity of vegetables in daily diets to ensure a balanced and nutritious intake of essential vitamins, minerals, and fiber, contributing to overall health and well-being.

S10. Ans.(d)

Sol. Farmers receive Rs. 6000 direct supports annually from the government under the PM-Kisan scheme. PM-Kisan, which stands for Pradhan Mantri Kisan Samman Nidhi, is a government initiative aimed at providing financial assistance to eligible farmers in India. The scheme involves direct income support of Rs. 6000 per year, distributed in three equal instalments, to help farmers meet their agricultural needs and improve their economic condition.

S11. Ans.(e)

Sol. Pendimethalin is a herbicide, and it is used against weeds. Specifically, it functions as a pre-emergence herbicide, meaning it is applied to the soil before weed seeds germinate. Pendimethalin works by inhibiting cell division in emerging weed seedlings, preventing their growth and development.

S12. Ans.(b)

Sol. The act of parturition in a sow is called "farrowing." Farrowing specifically refers to the process of a sow giving birth to piglets. During farrowing, the sow undergoes labor and delivers her offspring.

S13. Ans.(d)

Sol. The RM (Reichert-Meissl Number) test is conducted to assess the purity of Ghee. This test is specifically used to determine the amount of volatile fatty acids present in fats, with a higher RM number indicating a lower purity level. Ghee, being a clarified form of butter, undergoes this test to ensure its quality and authenticity by evaluating its fatty acid composition.

S14. Ans.(c)

Sol. The correct order for water holding capacity in descending order is (c) Clay > Silt > Sand. This is because clay particles have the smallest size and higher surface area, allowing them to hold more water through adhesion and cohesion. Silt particles are intermediate in size, while sand particles are larger and have lower water retention capacity.

S15. Ans.(b)

Sol. The symptoms of Powdery Mildew of pea first appear on the leaves. Powdery mildew is a fungal disease caused by various species of Erysiphales. Initially, it manifests as a powdery, white coating on the surfaces of pea leaves. This fungal infection can eventually affect other plant parts, but the characteristic powdery appearance typically starts on the leaves, making early detection crucial for disease management.

S16. Ans.(d)

Sol. The family of Mustard is Cruciferae. This family, also known as Brassicaceae, includes various cruciferous vegetables such as mustard, cabbage, broccoli, and radish. Members of the Cruciferae family are characterized by their four-petaled flowers arranged in the shape of a cross, which is a distinctive feature of plants in this botanical family.

S17. Ans.(b)

Sol. The process that softens the seed coat to allow water and gases to penetrate is called scarification. In scarification, the seed coat is mechanically or chemically treated to break or thin its hard outer layer, facilitating water absorption and gas exchange during germination.

S18. Ans.(c)

Sol. The protein present in silk is sericin, and the correct option is (c) Sericin. Sericin is a water-soluble protein produced by the silkworm *Bombyx mori*, along with fibroin. Fibroin forms the core of the silk fiber, while sericin acts as a bonding agent.

S19. Ans.(d)

Sol. The process of separating silk from the cocoon is called "Reeling." During reeling, the silk threads are carefully unwound from the cocoon, typically done by placing the cocoon in hot water to soften the sericin (a protein binding the silk threads). The softened silk fibers are then gently unraveled, forming a continuous strand that can be further processed into silk fabric.

S20. Ans.(d)

Sol. *Antherea mylitta* refers to Tropical Tassar, which is a type of silk-producing insect. The correct answer is (d) Tropical Tassar. This species is known for producing Tassar silk, a variety of silk that is primarily obtained from tropical regions. The cultivation and utilization of *Antherea mylitta* play a significant role in the silk industry, contributing to the production of Tassar silk with unique characteristics and qualities.

S21. Ans.(b)

Sol. Retting is the process associated with the crop Jute. It is a crucial step in jute processing, where the stems of jute plants are soaked in water to facilitate the separation of fibers from the woody stalks. The retting process breaks down the non-fibrous components, making it easier to extract and process the valuable jute fibers used in various industries, particularly for making textiles and sacks.

S22. Ans.(a)

Sol. The fruit of a rose is known as "Hips." Hips are a type of accessory fruit that develops from the base of the flower, containing the seeds of the rose plant. These structures are often red or orange in color and have a fleshy and rounded appearance. Rose hips are not only ornamental but are also used in various culinary and medicinal applications due to their rich vitamin C content and other beneficial compounds.

S23. Ans.(c)

Sol. The chemical used for polyploidy breeding is colchicine. Colchicine is a mitotic inhibitor that prevents the formation of the spindle fibers during cell division. When applied to plants, colchicine induces polyploidy by doubling the chromosome number. Polyploidy is valuable in plant breeding as it can result in increased vigor, altered phenotypes, and enhanced traits, contributing to the development of new crop varieties with improved characteristics.

S24. Ans.(d)

Sol. The correct answer is (d) Sorosis. The fruit of the pineapple is known as a sorosis. In pineapples, multiple flowers fuse together, forming a composite fruit. This unique structure, where individual fruitlets merge to create a single mass, is termed sorosis.

S25. Ans.(b)

Sol. The credit for the success of KVK (Krishi Vigyan Kendra) goes to Mangla Rai. Mangla Rai played a crucial role in advancing agricultural extension services in India.

S26. Ans.(c)

Sol. The buffalo breed from Gujarat with sickle-shaped horns is the Surati buffalo. Characterized by its distinctively curved or sickle-shaped horns, the Surati breed is well-adapted to the local agro-climatic conditions of Gujarat. Known for its high milk yield and resilience, the Surati buffalo is a valuable dairy breed contributing to the livestock diversity in the region.

S27. Ans.(a)

Sol. The reclamation of alkali soils can be achieved by using gypsum (calcium sulfate). Gypsum is effective in improving soil structure and drainage by displacing sodium ions, which are responsible for soil alkalization. The calcium in gypsum replaces sodium, leading to the formation of calcium-sodium aggregates that enhance soil permeability and reduce the adverse effects of soil alkalinity on plant growth.

S28. Ans.(b)

Sol. The vector of the Japanese encephalitis virus is the mosquito. Mosquitoes, particularly those belonging to the Culex species, play a crucial role in the transmission of the Japanese encephalitis virus. These mosquitoes become infected by feeding on infected birds and can subsequently transmit the virus to humans, causing Japanese encephalitis, a viral brain infection.

S29. Ans.(a)

Sol. Mandi is a primary type of market. In the context of agricultural markets in India, a mandi typically serves as a primary or wholesale market where farmers sell their agricultural produce directly to traders, wholesalers, or commission agents.

S30. Ans.(a)

Sol. The correct term for the cross of two different breeds alternatively is "Criss-cross." This breeding method involves alternating the mating of individuals from two different breeds in successive generations. It helps maintain genetic diversity and introduces desirable traits from both parental breeds into the breeding program.

S31. Ans.(a)

Sol. In 1886, Adolf Mayer published a seminal paper on a plant disease that he named "Mosaic disease of Tobacco." This marked one of the early recognitions and detailed descriptions of a viral disease affecting tobacco plants. The symptoms of mosaic diseases include mottling, discoloration, and deformities in the leaves, affecting the overall health and yield of the infected plants. Mayer's work laid the foundation for understanding plant viruses, and the term "mosaic" is commonly associated with various viral diseases affecting different crops.

S32. Ans.(a)

Sol. A smother crop refers to a rapidly growing crop intentionally planted to suppress or inhibit the growth of weeds. The primary purpose of a smother crop is to provide dense and vigorous vegetation that outcompetes weeds for sunlight, nutrients, and space, thereby reducing weed establishment and growth. This practice is commonly employed in sustainable agriculture and weed management strategies to control weed populations without relying heavily on herbicides. The smother crop serves as a natural and environmentally friendly method to suppress weed growth in fields or gardens.

S33. Ans.(a)

Sol. Late blight is a devastating plant disease primarily affecting potatoes and tomatoes. It is caused by the oomycete pathogen *Phytophthora infestans*. The disease manifests as dark lesions on leaves, stems, and tubers, leading to rapid plant deterioration and crop loss. Late blight is infamous for its role in the Irish Potato Famine during the 19th century, emphasizing its historical significance and economic impact on potato crops. The correct identification and management of late blight are crucial to prevent significant agricultural losses in potato cultivation.

S34. Ans.(d)

Sol. pre-seasonal planting of sugarcane in Maharashtra and Karnataka typically occurs in September-October. This timing is important to ensure favorable climatic conditions for the establishment and growth of sugarcane crops. The choice of this period allows the sugarcane plants to benefit from the sufficient warmth and moisture available during this season, contributing to successful germination, root development, and early growth. It aligns with the agricultural practices and regional climatic conditions in these states, optimizing the sugarcane planting cycle for a productive harvest.

S35. Ans.(d)

Sol. The Minimum Support Price (MSP) and issue prices are recommended by the Commission for Agricultural Cost & Prices (CACP). CACP is a government body responsible for advising the government on price policy, ensuring fair remuneration for farmers, and considering factors like production costs, market conditions, and overall agricultural economics. It plays a crucial role in determining MSPs for various agricultural commodities, providing a safety net for farmers and promoting agricultural sustainability.

S36. Ans.(a)

Sol. The mouldboard is an integral part of a plough, and it is used for ploughing or turning the soil. The mouldboard plough is a traditional tillage implement that consists of a curved blade (mouldboard) designed to invert and bury the soil as the plough moves through the field. This helps in breaking and loosening the soil, burying crop residues, and preparing the field for planting. The mouldboard plays a key role in the turning of soil slices, making it an essential component of ploughing operations in agriculture.

S37. Ans.(a)

Sol. Soil moisture is commonly measured using a tensiometer. A tensiometer is an instrument that determines soil moisture tension, which is the force exerted by soil moisture on a porous cup. As soil moisture decreases, the tension in the tensiometer increases, providing a quantitative measure of soil moisture levels. Tensiometers are widely used in agriculture to monitor soil moisture conditions, helping farmers make informed decisions about irrigation timing and water management in crop fields.

S38. Ans.(a)

Sol. The European honey bee is scientifically known as *Apis mellifera*. It is a species of honey bee native to Europe and has been introduced to various parts of the world for honey production and pollination services. *Apis mellifera* is one of the most commonly managed and domesticated species of honey bees and plays a crucial role in agriculture and ecosystems as pollinators.

S39. Ans.(a)

Sol. 2,4-D (2,4-dichlorophenoxyacetic acid) is a herbicide widely used to control broadleaf weeds in various crops, lawns, and other vegetation. It is known for its selective action against dicotyledonous plants while sparing most monocotyledonous plants (grasses). 2,4-D disrupts the normal growth patterns in susceptible plants, leading to uncontrolled growth, twisting, and death. As a herbicide, it is effective in managing unwanted broadleaf plants in agricultural and non-agricultural settings.

S40. Ans.(a)

Sol. Granite is not a sedimentary rock; it is an igneous rock. Granite forms from the slow crystallization of molten magma beneath the Earth's surface. In contrast, the other options—limestone, sandstone, and dolomite—are sedimentary rocks. Limestone is often composed of the remains of marine organisms, sandstone is formed from compacted sand, and dolomite is a sedimentary rock containing a significant amount of the mineral dolomite.

S41. Ans.(a)

Sol. Buffalo milk appears whiter than cow milk due to the conversion of beta-carotene pigment to a colorless pigment. Beta-carotene, which is present in the milk, is responsible for the yellowish color. In buffalo milk, an enzyme presents in the milk called beta-carotene reductase converts beta-carotene to colorless compounds, resulting in a whiter appearance. Cow milk, on the other hand, retains more of the beta-carotene pigment, contributing to a slightly yellowish hue.

S42. Ans.(b)

Sol. The process of scratching, rubbing, or softening the seed coat to make it permeable for water and enhance germination is known as scarification. Scarification is a common technique used in seed preparation to break the seed coat dormancy and facilitate water absorption. This process mimics the natural conditions that some seeds would experience in the environment, promoting the germination of seeds that may have tough or hard seed coats.

S43. Ans.(a)

Sol. The combination of trees, crops, and pasture in a single integrated system is known as an Agrisilvopastoral system. In this agroforestry practice, farmers combine agricultural crops, tree cultivation (silviculture), and pasture for livestock, creating a diverse and sustainable land-use system. This approach promotes synergy among different components, enhancing overall productivity, biodiversity, and ecological sustainability on the farm.

S44. Ans.(a)

Sol. Zoonosis refers to diseases that can be transmitted from animals to humans. These diseases can be caused by bacteria, viruses, parasites, or other pathogens that are naturally present in animals. The transmission may occur through direct contact with animals, their products, or environments contaminated with their excreta. Zoonotic diseases pose challenges to public health and require attention to prevent and control outbreaks, especially in situations where humans and animals closely interact.

S45. Ans.(a)

Sol. The process of breaking fat globules into uniform sizes in milk is called homogenization. Homogenization is a mechanical process that reduces the size of fat globules in milk, creating a more uniform distribution. This prevents cream separation and improves the texture and stability of dairy products. During homogenization, milk is forced through a fine nozzle under high pressure, breaking down the fat globules into smaller particles that remain dispersed throughout the milk.

S46. Ans.(a)

Sol. Anammox, which stands for Anaerobic Ammonium Oxidation, is a step in the nitrogen cycle (N Cycle). It is a microbial process in which certain bacteria oxidize ammonium (NH_4^+) into nitrogen gas (N_2) under anaerobic conditions. Anammox plays a crucial role in the removal of nitrogen compounds from various ecosystems and is a key step in the overall nitrogen cycle, contributing to nitrogen balance in natural environments.

S47. Ans.(a)

Sol. The process of removing off-type or undesirable plants from a crop field is known as rouging. Rouging involves the identification and elimination of plants that deviate from the desired characteristics of the main crop. This practice is essential to maintain the genetic purity of the crop and ensure that the cultivated plants exhibit the desired traits such as uniformity, resistance to diseases, and high yield. Rouging is commonly used in the production of crops like fruits, vegetables, and flowers to enhance overall crop quality.

S48. Ans.(a)

Sol. The disorder described, where the arils of pomegranate become soft and discolored without external symptoms, is known as Internal breakdown of Pomegranate. This condition is not easily identifiable externally, making it challenging to detect until the fruit is cut open, revealing the undesirable changes in texture and color within the arils. Internal breakdown can be influenced by factors such as storage conditions, handling practices, and the physiological characteristics of the pomegranate variety.

S49. Ans.(a)

Sol. The structure of the DNA helix involves hydrogen bonds between complementary base pairs. The two strands of DNA run in opposite directions, creating a structure known as anti-parallel. The hydrogen bonds form between specific base pairs: adenine (A) pairs with thymine (T), and guanine (G) pairs with cytosine (C). These hydrogen bonds between the complementary bases contribute to the stability and integrity of the DNA double helix.

S50. Ans.(a)

Sol. In sugarcane ratooning, where a new crop grows from the stubble of the previous crop, there is typically an increased demand for nitrogen (N). Ratooning involves the regrowth of the sugarcane plant from the residual stubble after the main crop has been harvested. Since the plant is re-growing, it requires additional nitrogen to support the vigorous vegetative growth during the ratooning phase. Therefore, compared to a pure crop, sugarcane ratooning often requires more nitrogen for optimal growth and yield.

S51. Ans.(b)

Sol. In the specified regions (Maharashtra, Karnataka, and Andhra Pradesh), grape vines are typically pruned twice a year. The first pruning occurs in April-May, and the second pruning takes place in October-November. Pruning is an essential horticultural practice that helps manage vine growth, improve fruit quality, and maintain the overall health of grapevines. The timing of pruning is crucial for influencing the balance between vegetative growth and fruit production in grape cultivation.

S52. Ans.(a)

Sol. The process described, involving the secretion of milk by the glandular secretory tissue of milk-producing animals, the collection of milk in various systems, and its letdown in response to specific stimuli, is known as lactation. Lactation is a complex physiological process in mammals, including humans and various milk-producing animals. It involves the synthesis, secretion, and ejection of milk from the mammary glands in response to hormonal and neural signals, often associated with the needs of offspring or milking practices in agriculture.

S53. Ans.(a)

Sol. The coconut beetle is commonly known as the Rhinoceros beetle. This beetle, belonging to the family Scarabaeidae, is characterized by its distinctive horn-like projection on the head, resembling the horn of a rhinoceros. Rhinoceros beetles are known to infest coconut palms and other trees. While they are not exclusive to coconuts, they can cause damage by feeding on the soft tissues of palm trees, including coconut palms, which may affect the health and productivity of the trees.

S54. Ans.(a)

Sol. The foundation seed is the progeny of the breeder seed. The seed multiplication process begins with the breeder seed, which is the initial pure and genetically stable seed stock developed by plant breeders. The foundation seed is then produced from the breeder seed through controlled cultivation and seed production practices. It serves as the second generation in the seed multiplication chain and is used to produce the subsequent category, known as the certified seed, which is then made available to farmers for cultivation.

S55. Ans.(a)

Sol. Bordeaux mixture is a fungicidal mixture used in plant protection. It contains copper, typically in the form of copper sulfate or copper hydroxide, along with lime (calcium hydroxide) and water. The copper component in Bordeaux mixture acts as a fungicide, helping to control various fungal diseases in crops. It is commonly used in agriculture to prevent and manage diseases on plants, particularly on fruit trees, vines, and other crops susceptible to fungal infections.

S56. Ans.(a)

Sol. Drilling is the method of continuous seed sowing in a row and covering the seeds with soil. In this planting technique, seeds are placed in furrows or rows at a predetermined spacing and then covered with soil using a drill or planter. Drilling is a common method in modern agriculture for achieving uniform seed placement and optimizing plant density, especially in crops where row spacing is crucial for efficient cultivation and management.

S57. Ans.(a)

Sol. Milk fever, also known as hypocalcemia, is a condition in lactating animals, particularly dairy cows, caused by a deficiency of calcium (Ca). It commonly occurs around the time of calving when the demand for calcium is high due to milk production. The insufficient intake or absorption of calcium from the diet can lead to milk fever. It is a significant concern in dairy farming and is usually addressed through dietary supplementation to prevent and manage the condition in lactating animals.

S58. Ans.(a)

Sol. The housing system used in commercial layer farming with cages having dimensions such as 14 × 16 inches or 17 inches is known as the Battery Method. In this method, multiple cages are arranged in tiers or rows to maximize space utilization and egg production efficiency. The Battery Method is commonly employed in commercial poultry farming for egg-laying hens, providing a controlled environment that facilitates management, feeding, and egg collection.

S59. Ans.(a)

Sol. The described technique is associated with Biofloc fish farming. In Biofloc fish farming, the focus is on maintaining a higher C: N (Carbon to Nitrogen) ratio to stimulate the growth of heterotrophic microbes. These microbes help assimilate nitrogenous waste produced by the cultured fish, creating a nitrogen cycle within the system. The microbial biomass formed serves as a supplemental feed for the cultured species, contributing to improved water quality and overall system sustainability.

S60. Ans.(e)

Sol. When hybrids are produced by the protoplasmic fusion of cells from two different species or varieties, it is known as somatic hybridization. This technique involves fusing the protoplasts (cells without cell walls) of different species or varieties, resulting in a hybrid organism with combined genetic traits. Somatic hybridization is a method used in plant breeding and genetic research to introduce desirable traits from one species or variety into another.