

IBPS SO AGRICULTURAL FIELD OFFICER (SCALE I) MAINS
YEAR: 2022

Q1. Coorg is a commercial variety of?

- (a) Cocoa
- (b) Cherry
- (c) Tea
- (d) Coffee
- (e) Rubber

Q2. "Pusa Nanha" dwarf variety of Papaya is developed through?

- (a) Mutation
- (b) Hybridization
- (c) Heterosis
- (d) Selection
- (e) Micropropagation

Q3. Which breed of goat is called the 'Milk Queen' of goats in the world?

- (a) Toggenburg
- (b) Anglo Nubian
- (c) Barbari
- (d) Sirohi
- (e) Saanen

Q4. What is the minimum isolation distance required for the certified seed production of okra?

- (a) 3 Meter
- (b) 10 Meter
- (c) 400 Meter
- (d) 200 Meter
- (e) 50 Meter

Q5. Akiuchi disease in rice is due to the toxicity caused by?

- (a) Zinc
- (b) Iron
- (c) Phosphorus
- (d) Hydrogen Sulphide (H₂S)
- (e) Copper

Q6. The test is done to identify incomplete pasteurization in milk?

- (a) Alkaline test
- (b) MBE
- (c) Alcohol
- (d) COB test
- (e) None of these

Q7. Virus causes leaf curl disease of chili and it is transmitted by?

- (a) Thrips
- (b) Whitefly
- (c) Aphid
- (d) Hopper
- (e) Mites

Q8. What is the diagnostic symptom of infestation of stem borer of maize?

- (a) Caterpillars feed on the leaves and bore into the stem and cob
- (b) Adults and nymphs feed on the crop and damage it to leave
- (c) Caterpillars feed on the leaves and cause leaf curl and damage to crops.
- (d) Caterpillars feed on leaves and spots on leaves
- (e) None of these

Q9. Urea bag has been reduced from 50 kg to _____?

- (a) 45 kg
- (b) 40 kg
- (c) 35 kg
- (d) 30 Kg
- (e) 25 kg

Q10. Amrapali is a cross between?

- (a) Neelum x Dashehari
- (b) Dashehari x Neelum
- (c) Ratna x Alphonso
- (d) Alphonso x Ratna
- (e) Banganapalli x Alphonso

Q11. IRRI and its national research partners have developed Golden rice that is rich in?

- (a) Beta-carotene
- (b) Vitamin B
- (c) Ascorbic acid
- (d) Vitamin K
- (e) Vitamin E

Q12. Rock phosphate is applied in which type of soil?

- (a) Saline
- (b) Alkaline
- (c) Neutral
- (d) Acidic soil
- (e) None of these

Q13. Dual purpose (Milk and Meat) breed of Goat?

- (a) Black Bengal
- (b) Beetal
- (c) Marwadi
- (d) Sanen
- (e) None of these

Q14. First Advance Estimates of National Income and Expenditures released by national statistical official, ministry of statistics on January 29, 2021. What is the Livestock sector's contribution to overall GVA?

- (a) 4.8 %
- (b) 6.2 %
- (c) 5.2 %
- (d) 4.0 %
- (e) 7.1 %

Q15. The Oil content of groundnut is?

- (a) 44 to 58%
- (b) 33 to 43 %
- (c) 20-25%
- (d) 15-20%
- (e) Less than 15 %

Q16. The Cabinet Committee on Economic Affairs has approved the Fair and Remunerative Price (FRP) of sugarcane per quintal for the sugar season 2021-22?

- (a) 290/quintal
- (b) 285/quintal
- (c) 270/quintal
- (d) 260/quintal
- (e) 240/quintal

Q17. Potato tubers are cured at _____°C for 2 days and then at 7°C-10°C for 10-12 days at 90% relative humidity?

- (a) 4
- (b) 18
- (c) 24
- (d) 28
- (e) 37.5

Q18. Guava flesh pink spot variety that is also known as Sardar?

- (a) L-49 M
- (b) Allahabad safeda
- (c) Allahabad surkha
- (d) Safeda
- (e) None of these

Q19. Plant growth mechanisms towards the sunlight or other direction towards light is known as?

- (a) Photoperiodism
- (b) Phototropism
- (c) Photorespiration
- (d) Photosynthesis
- (e) Photophosphorylation

Q20. The process in which immature green fruits turned into edible, desirable flavor, quality, color, and palatable nature with ethylene treatment?

- (a) Degreening
- (b) Ripening
- (c) Curing
- (d) Precooling
- (e) Disinfection

Q21. The tree which produces silk cotton and kapok?

- (a) Bombax ceiba
- (b) Ceiba pentandra
- (c) Cochosperrum religiosum
- (d) Som & Soalu
- (e) Ricinus Communis

Q22. In the color chart of different diameter classes of trees, which class has no color chart?

- (a) 0-20 cm
- (b) 20-30 cm
- (c) 30-40 cm
- (d) 40-50 cm
- (e) 50-60 cm

Q23. Boron deficiency indicator plant is _____.

- (a) Sunflower
- (b) Bajra
- (c) Potato
- (d) Onion
- (e) Cauliflower

Q24. Exotic, cross-breed cow & buffalo for 5th of pregnancy how much concentrate (other than maintenance)?

- (a) 3 kg
- (b) 2.5 kg
- (c) 15 kg
- (d) 1 kg
- (e) 0.5 kg

Q25. Soil & water conservation method mostly used in hilly & mountain areas is?

- (a) Contour bunding
- (b) Bench terracing
- (c) Zing terracing
- (d) Graded bunding
- (e) None of these

Q26. An advanced method of minimum tillage in which primary tillage is completely avoided and secondary tillage is reduced to row zone/seedbed zone only?

- (a) Ridge till
- (b) Stubble mulch farming
- (c) Minimum tillage
- (d) Strip tillage
- (e) Zero tillage

Q27. Which soil ameliorants are used in sodic soil reclamation that is cheaper and easily available?

- (a) Gypsum
- (b) Ammonium sulfate
- (c) Lime
- (d) Iron pyrite
- (e) Ammonium nitrate

Q28. A _____ is a structure enclosed by agro nets or any other woven material to allow required sunlight, moisture, and air to pass through the gaps. It creates an appropriate microclimate conducive to plant growth.

- (a) Shade house
- (b) Greenhouse
- (c) Playhouse
- (d) Hydroponics
- (e) None of the above

Q29. Implement used for seedbed preparation and removal of weeds and stubbles, mixing of manures fertilizers is _____.

- (a) Cultivator
- (b) Rotavator
- (c) Leveller
- (d) Plough
- (e) None of these

Q30. A basic component of protein & chlorophyll constituent, vegetation growth, skeletal nutrients, and help in amino acid and protein formation is?

- (a) N
- (b) Mg
- (c) P
- (d) Mn
- (e) K

Q31. Which among the following is the highest priority brackish water fish has a high growth rate and can tolerate fluctuations in temperature?

- (a) White prawn
- (b) Tiger prawn
- (c) Milk Fish
- (d) Shrimp
- (e) Lobster

Q32. TSS for sugarcane ripening determination- brix?

- (a) 20
- (b) 10
- (c) 25
- (d) 30
- (e) 32

Q33. Cricket ball & Kalipatti variety of which crop?

- (a) Sapota
- (b) Ber
- (c) Guava
- (d) Pear
- (e) Plum

Q34. ACABC (Agri Clinics and Agribusiness Centre) take training from which of the following institute?

- (a) KVIC
- (b) MANAGE
- (c) ICAR
- (d) ATMA
- (e) NABARD

Q35. Which among the following is a drought breed of cattle where cows are less milker, but bulls are best for cart & field purposes?

- (a) Sahiwal
- (b) Gir
- (c) Tharparkar
- (d) Krishna Valley
- (e) Red Sindhi

Q36. If an irrigation water source has the concentration of Na^+ , Ca^{++} & Mg^{++} as 20-, 10- & 8-ml equivalents per liter respectively, then the sodium absorption ratio of this water?

- (a) 6.67
- (b) 6
- (c) 5.1
- (d) 4
- (e) None of these

Q37. Prevention of brucellosis disease in goats can be done by taking measures like?

- (a) Dipping in CuSO_4 tank
- (b) Isolation, vaccination, blood test, culling of affected animals
- (c) Proper medication and antibiotics
- (d) Clean hygiene
- (e) Avoid Green fodder feeding

Q38. Zero tillage got successful because of?

- (a) Soil amendments
- (b) Herbicides
- (c) Insecticides
- (d) Fungicides
- (e) Pesticides

Q39. Which is used in the rear of the tractor transmission part for attaching the combine harvester, mover, thresher, etc. to the tractor?

- (a) PTO
- (b) Tractor Drawbar
- (c) Hitch
- (d) Tractor pulley
- (e) Battery

Q40. Which instrument is used to determine water content in milk?

- (a) Lactometer
- (b) Hydrometer
- (c) Anemometer
- (d) Katharometer
- (e) Lactoscope

Q41. Norin 10 gene responsible for Dwarfness in which crop?

- (a) Dwarf gene in wheat
- (b) Dwarf gene in rice
- (c) Dis. Resistance in maize
- (d) Dwarf gene in maize
- (e) None of these

Q42. A conical evergreen tree with dark green and silvery leaves, spirally arranged, broad leaves at a stage, no symmetry, grows in cool temperatures?

- (a) Deodar
- (b) Khair
- (c) Sheesham
- (d) Haldu
- (e) None of these

Q43. Which technique does not transfer genes directly?

- (a) Explant culture & Transfer
- (b) Particle bombardment
- (c) Chemical transfection
- (d) Electroporation
- (e) Microinjection

Q44. What is the purpose of pasteurization in milk?

- (a) To destroy most of the pathogenic microorganism disease-causing bacteria
- (b) To check the growth of bacteria
- (c) To check the adulteration in milk
- (d) To increase the acidity of milk
- (e) To reduce the size of fat globules

Q45. In the adiabatic dehumidification process, when humid air passes through a desiccated cell or material then the humidity of the material___ and temperature_?

- (a) Increase, decrease
- (b) Increase, Increase
- (c) Decrease, Increase
- (d) Decrease, decrease
- (e) None of these

Q46. In Tamilnadu, catamarans made up of 3-5 logs are in pattern and a specialized type made of 7 logs catamaran or kolamaram are used for catching flying fish. It's termed?

- (a) Catamaran
- (b) Coromandel
- (c) Andra type
- (d) Dhingra
- (e) None of these

Q47. The organism that can withstand a wider range of salinity is known as an?

- (a) Stenohaline
- (b) Euryhaline
- (c) Oligohaline
- (d) Estuarine
- (e) None of these

Q48. Main reason for seed dormancy is?

- (a) Immature embryo
- (b) Physical cracking
- (c) Presence of pathogen
- (d) Distorted seed coat
- (e) Fungal growth

Q49. Loans against pledge hypothecation of agriculture produce including warehouse receipts) for a period not exceeding 12 months subject to limit up to against NWRs/ENWRS?

- (a) 75 Lakh
- (b) 50 Lakh
- (c) 25 Lakh
- (d) 100 Lakh
- (e) None of these

Q50. Imperfectly developed female unable to reproduce but possess all the maternal instinct & also defense mechanism has been developed and does the work for colony welfare?

- (a) Queen bee
- (b) Worker bee
- (c) Drone
- (d) Solitary bee
- (e) None of these

Q51. Growing plants out from forest area where it was not present before and whose purpose is to increase the area under forest is known as?

- (a) Farm Forestry
- (b) Extension forestry
- (c) Recreational forestry
- (d) Mixed forestry
- (e) Agroforestry

Q52. Fish having lungs as labyrinths?

- (a) Rohu
- (b) Catla
- (c) Mrigal
- (d) Gourami
- (e) None of these

Q53. Advance pregnancy symptoms in cattle when an embryo is out?

- (a) Lapsing of uterus and vagina
- (b) Anoestrus
- (c) Sexual impurities
- (d) Oestrus
- (e) Silent oestrus

Q54. Curled toe paralysis in chicken due to?

- (a) Vita-B1
- (b) Vit-B2
- (c) Vit. -E
- (d) Vit- A
- (e) None of these

Q55. Muga silk is reared on?

- (a) Som & Soalu
- (b) Castor
- (c) Arjun
- (d) Shorea robusta
- (e) Terminalia tomentosa

Q56. When the plant is propagated by small tissue or part of the plant is termed a?

- (a) Sexual propagation
- (b) Micropropagation
- (c) Hybridization
- (d) Somatic hybridization
- (e) None of these

Q57. Which among the following is the highest priority brackish water fish has a high growth rate and can tolerate fluctuation in temperature?

- (a) White shrimp
- (b) Tiger shrimp
- (c) Milkfish
- (d) Prawn
- (e) Lobster

Q58. Which of the following is a bacterial infectious disease of fishery Disintegrating fins, blood on edges of fins, fin rays become brittle and lead to fin and tail rot?

- (a) Red pest
- (b) Dropsy
- (c) Mouth fungus
- (d) Tail and fin rot
- (e) Velvet

Q59. Method of drainage that is used in high water table areas, hilly areas, and under the surface?

- (a) Mole drainage
- (b) Tile drainage
- (c) Gravity outlet
- (d) Open channel
- (e) None of these

Q60. The sum of lignin and polysaccharides that are not digested by endogenous secretion of digestive tract _____.

- (a) Lipid
- (b) Polysaccharides
- (c) Starch
- (d) Dietary fibers
- (e) Amides

Solutions

S1. Ans.(d)

Sol. Coorg is renowned for its coffee plantations, making it a major producer of high-quality coffee beans. Therefore, the correct answer is (d) Coffee. The region's favorable climate and elevation contribute to the cultivation of Arabica and Robusta coffee varieties, making Coorg a significant player in the Indian coffee industry.

S2. Ans.(a)

Sol. The "Pusa Nanha" dwarf variety of Papaya is developed through mutation. Mutation refers to a sudden and heritable change in the genetic material of an organism. In this case, a specific mutation led to the development of the dwarf variety, which is characterized by its shorter stature compared to the typical papaya plants. This genetic change was then selected and propagated to create the "Pusa Nanha" variety.

S3. Ans.(e)

Sol. The breed of goat known as the 'Milk Queen' is the Saanen. Saanen goats are renowned for their exceptional milk production and are highly valued in the dairy industry. They are characterized by their white coat and are known for their friendly temperament. The breed originated in Switzerland and has gained popularity worldwide for its high milk yield and quality.

S4. Ans.(d)

Sol. In certified seed production of okra, a minimum isolation distance of 200 meters is required to prevent cross-pollination with other varieties or unwanted plants. This distance helps maintain the genetic purity of the seeds and ensures that the produced seeds conform to the specified standards for certification.

S5. Ans.(d)

Sol. Akiuchi disease in rice is caused by the toxicity of Hydrogen Sulphide (H_2S). This toxic gas is produced in waterlogged soils due to anaerobic conditions, where the oxygen supply is limited. The accumulation of Hydrogen Sulphide can lead to various physiological and biochemical disruptions in rice plants, resulting in the symptoms associated with Akiuchi disease.

S6. Ans.(a)

Sol. The test conducted to identify incomplete pasteurization in milk is the Alkaline Phosphatase Test. Alkaline Phosphatase is an enzyme present in raw milk, and its activity is destroyed during proper pasteurization. Therefore, if the test detects the presence of alkaline phosphatase in milk, it indicates incomplete pasteurization. The other options, MBE (Methylene Blue Dye Reduction Test), Alcohol test, and COB (Catalase Orange Bromocresol) test, are not specifically designed to identify incomplete pasteurization in milk.

S7. Ans.(a)

Sol. Leaf curl disease of chili is caused by a virus, and it is primarily transmitted by thrips. Thrips are small, winged insects that feed on plants by puncturing and sucking the sap. During feeding, they can transmit the virus from infected plants to healthy ones, leading to the characteristic symptom of leaf curl in chili plants.

S8. Ans.(a)

Sol. The diagnostic symptom of infestation of stem borer of maize is caterpillars feeding on the leaves and boring into the stem and cob. This behavior is characteristic of stem borers, as they tunnel into the plant's stems and cob, causing damage to the internal structures.

S9. Ans.(a)

Sol. In order to ensure balanced use of fertilizers and reduce the consumption of urea, vide notification dated 4th September, 2017 Government of India has decided to introduce 45 kg of urea in place of 50kg bags. The MRP of urea was notified by Department of Agriculture Cooperation and Farmers' welfare.

S10. Ans.(b)

Sol. Amrapali is a popular mango variety that was developed through the crossbreeding of Dashehari and Neelum mango varieties. Dashehari contributes its sweet and aromatic flavor, while Neelum adds a distinct taste and texture to create the unique characteristics of the Amrapali mango.

S11. Ans.(a)

Sol. The correct answer is (a) Beta-carotene. IRRI (International Rice Research Institute) and its national research partners have developed Golden Rice with the aim of addressing vitamin A deficiency in populations that rely heavily on rice as a staple food. Golden Rice is genetically modified to produce beta-carotene, a precursor of vitamin A, which is essential for eye health and overall well-being.

S12. Ans.(d)

Sol. Rock phosphate is typically applied in acidic soil. This is because rock phosphate contains phosphorus, which is more readily available to plants in acidic conditions. In acidic soils, the phosphorus in rock phosphate becomes more soluble and accessible for plant uptake, promoting better growth and development. Therefore, the correct answer is (d) Acidic soil.

S13. Ans.(b)

Sol. Beetal goats are considered a dual-purpose breed as they are suitable for both milk and meat production. They are known for their high-quality meat and also exhibit good milk-producing capabilities. This dual-purpose trait makes Beetal goats a popular choice among farmers looking to optimize both meat and milk production in their goat farming operations.

S14. Ans.(c)

Sol. The Livestock sector's contribution to the overall Gross Value Added (GVA) in the First Advance Estimates of National Income and Expenditures released by the national statistical office on January 29, 2021, was 5.2% (option c). This indicates the percentage share of the Livestock sector's contribution to the total economic output in the country during that period.

S15. Ans.(a)

Sol. Groundnuts, also known as peanuts, typically have an oil content ranging from 44% to 58%. This high oil content makes groundnut oil a valuable source for cooking and various food products. The other options represent incorrect ranges or unrelated numerical values for the oil content of groundnuts.

S16. Ans.(a)

Sol. The Cabinet Committee on Economic Affairs approved the Fair and Remunerative Price (FRP) of sugarcane at 290 per quintal for the sugar season 2021-22. This decision is crucial for supporting and ensuring fair returns to sugarcane farmers, contributing to the stability of the sugar industry in the country.

S17. Ans.(b)

Sol. Potato tubers are typically cured at 18°C for 2 days and then at 7°C-10°C for 10-12 days with a relative humidity of 90%. Curing helps to heal wounds, reduce the risk of diseases, and improve storage quality by allowing the skin to set and providing a protective layer. The specific temperature and duration mentioned in the answer are standard practices for potato curing.

S18. Ans.(a)

Sol. The Guava flesh pink spot variety known as Sardar is identified as (a) L-49 M. This variety is specifically associated with the name Sardar and is recognized as L-49 M in the context of guava classification. The other options mentioned (b) Allahabad safeda, (c) Allahabad surkha, and (d) Safeda are not synonymous with the Sardar variety. Therefore, the correct answer is (a) L-49 M.

S19. Ans.(a)

Sol. Phototropism is the plant's growth response towards light. This mechanism allows plants to orient their growth towards a light source, optimizing their exposure to sunlight for photosynthesis. Photoperiodism, on the other hand, refers to a plant's response to the length of day and night, while photorespiration, photosynthesis, and photophosphorylation are distinct processes involved in plant metabolism and energy production.

S20. Ans.(b)

Sol. Ethylene is a plant hormone that plays a crucial role in the ripening process of fruits. When immature green fruits are treated with ethylene, it triggers a series of biochemical and physiological changes that lead to the development of desirable flavor, quality, color, and palatability, transforming the fruit from its immature state to a mature and edible one. This process is commonly employed in the food industry to enhance the ripening of fruits such as bananas, tomatoes, and avocados.

S21. Ans.(b)

Sol. The tree that produces silk cotton and kapok is (b) *Ceiba pentandra*. Commonly known as the kapok tree, it is native to the tropical rainforests of Central and South America, as well as parts of Africa and Asia. The fibers from its seed pods are used to make kapok, a fluffy, lightweight material with insulating properties. Additionally, the tree is also known for producing silk cotton, another fibrous material.

S22. Ans.(a)

Sol. The answer is (a) 0-20 cm. This is because trees with a diameter of 0-20 cm are typically considered seedlings or saplings, which are young and small in size. As they are in the early stages of growth, there may not be a specific color chart dedicated to this diameter class in typical forestry or arboricultural practices.

S23. Ans.(a)

Sol. Sunflower is considered a good indicator plant for boron deficiency. Boron is an essential micronutrient for plant growth, and sunflowers are known to exhibit visible symptoms such as stunted growth, distorted leaves, and reduced seed development when they lack sufficient boron in the soil. Monitoring sunflower plants can help farmers identify and address boron deficiencies in their crops.

S24. Ans.(c)

Sol. During the 5th month of pregnancy in exotic cross-breed cows and buffaloes, the nutritional requirements increase significantly to support the growing fetus. This higher demand for nutrients, including proteins and energy, necessitates an increase in concentrate feed. Providing 15 kg of concentrate ensures that the pregnant animal receives adequate nutrition for both maintenance and the developmental needs of the fetus during this crucial stage of pregnancy.

S25. Ans.(a)

Sol. Contour bunding is the most commonly used soil and water conservation method in hilly and mountainous areas. It involves constructing small embankments along the contour lines of the land, which helps in slowing down the flow of water, reducing soil erosion, and promoting water infiltration. This method is effective in preventing soil loss on sloping terrains, making it a preferred choice for conservation practices in such regions.

S26. Ans.(e)

Sol. Zero tillage is an advanced method where primary tillage is entirely skipped, and secondary tillage is minimized to only the row zone or seedbed zone. This practice helps in preserving soil structure, reducing erosion, and conserving moisture while promoting sustainable and resource-efficient agriculture.

S27. Ans.(a)

Sol. Gypsum (option a) is commonly used as a soil ameliorant in sodic soil reclamation due to its effectiveness in reducing soil sodium levels. It is a cost-effective and readily available option. Gypsum works by promoting the displacement of sodium ions from soil particles, improving soil structure and permeability. Other options like ammonium sulfate, lime, iron pyrite, and ammonium nitrate may not be as suitable or cost-effective for sodic soil reclamation.

S28. Ans.(a)

Sol. A Shade house is a structure enclosed by agro nets or any other woven material to allow required sunlight, moisture and air to pass through the gaps. It creates an appropriate micro climate conducive to the plant growth. It is also referred as shade net house or net house.

S29. Ans.(a)

Sol. Cultivators are designed to perform various soil cultivation tasks, such as breaking up soil, aerating, and incorporating organic matter. They are equipped with rotating blades or tines that work the soil, making it suitable for planting and promoting optimal seedbed conditions.

S30. Ans.(a)

Sol. Nitrogen is a fundamental component of proteins and chlorophyll, essential for vegetation growth. It plays a crucial role in the formation of amino acids and proteins, contributing to the structural and functional aspects of plants.

S31. Ans.(b)

Sol. Tiger prawn (*Penaeus monodon*) is the highest priority brackish water fish due to its high growth rate and tolerance to temperature fluctuations. This species is commercially significant in aquaculture for its rapid growth, adaptability to varying environmental conditions, and overall hardiness. Tiger prawns are well-suited for cultivation in brackish water, which is a mix of saltwater and freshwater. Their ability to tolerate fluctuations in temperature makes them resilient to changes in environmental conditions, contributing to their suitability for aquaculture.

S32. Ans.(a)

Sol. Total Soluble Solids (TSS) is commonly measured in sugarcane to determine ripeness, and the unit used for expressing TSS in sugarcane is degrees Brix ($^{\circ}\text{Brix}$). A Brix value of 20 is often considered an indicator of ripeness in sugarcane. This means that the sugarcane juice contains 20 grams of sucrose in 100 grams of juice.

In the context of sugarcane ripening determination, a Brix value of 20 indicates an optimal sugar concentration in the juice, signifying that the sugarcane is ready for harvesting. This measurement is crucial for determining the right time to harvest sugarcane for optimal sugar content, which is essential for the sugar industry.

S33. Ans.(a)

Sol. The "Cricket Ball" and "Kalipatti" are varieties of the Sapota (*Manilkara zapota*) fruit.

Cricket Ball: It is a popular variety of sapota, known for its round shape and sweet, flavorful pulp. The name "Cricket Ball" may be inspired by the fruit's shape, resembling a cricket ball.

Kalipatti: This is another variety of sapota, and it is known for its delicious and sweet taste. The name "Kalipatti" may refer to the dark (kali in Hindi) color of the fruit when ripe.

S34. Ans.(b)

Sol. ACABC stands for Agri Clinics and Agribusiness Centres. These are initiatives in India aimed at providing training and support to individuals interested in agriculture-related ventures. The training for ACABC is provided by MANAGE, which stands for the National Institute of Agricultural Extension Management.

MANAGE is an autonomous institution under the Ministry of Agriculture and Farmers Welfare, Government of India. It focuses on agricultural extension and management and plays a crucial role in providing training, research, and consultancy services to enhance the managerial and technical capabilities of agricultural extension officers and other stakeholders.

S35. Ans.(d)

Sol. Krishna Valley is a breed of cattle, specifically known for its resilience to drought conditions. In this breed, the cows are generally less productive in terms of milk yield, but the bulls are highly valued for their strength and suitability for cart and field purposes.

Key points about Krishna Valley breed:

Adaptability to Drought: Krishna Valley cattle are adapted to arid and drought-prone regions, where they can withstand harsh environmental conditions, scarcity of water, and limited forage availability.

Less Milk Yield in Cows: While the cows of Krishna Valley are not known for high milk production compared to some other dairy breeds, they are valued for their ability to thrive in challenging climates.

Strong Bulls for Work: The bulls of Krishna Valley are particularly strong and well-suited for agricultural work, such as plowing fields and pulling carts. Their robust build and endurance make them suitable for various draught purposes.

S36. Ans.(a)

Sol. The Sodium Absorption Ratio (SAR) is a measure used to assess the sodium hazard in irrigation water. It is calculated using the concentrations of sodium (Na^+), calcium (Ca^{++}), and magnesium (Mg^{++}) in the water.

The formula for calculating SAR is:

$$SAR = \frac{Na^{+}}{\sqrt{\frac{Ca^{++}}{2} + \frac{Mg^{++}}{2}}}$$

Given the concentrations:

$$Na^{+} = 20\text{meq/L}$$

$$Ca^{++} = 10\text{meq/L}$$

$$Mg^{++} = 8\text{meq/L}$$

Substituting these values into the SAR formula:

$$SAR = \frac{20}{\sqrt{\frac{10}{2} + \frac{8}{2}}}$$

$$SAR = \frac{20}{\sqrt{5+4}}$$

$$SAR = \frac{20}{\sqrt{9}}$$

$$SAR = \frac{20}{3}$$

$$SAR = 6.67$$

S37. Ans.(b)

Sol. Brucellosis is a bacterial infection caused by Brucella species, and it can affect various animals, including goats. Preventive measures for brucellosis in goats involve a combination of strategies:

Isolation: Infected animals should be isolated from the healthy ones to prevent the spread of the disease. This helps in containing the infection and minimizing the risk of transmission.

Vaccination: Vaccination is an effective preventive measure against brucellosis. Vaccines are available for goats to reduce the risk of infection. Vaccinating the animals can help build immunity and prevent the occurrence of the disease.

Blood Test: Regular blood tests can be conducted to detect the presence of brucellosis in goats. This is particularly important for early diagnosis and to implement control measures promptly.

Culling of Affected Animals: In cases where animals are confirmed to be infected, culling (humane euthanasia) of affected animals is often considered. This helps prevent the further spread of the disease within the herd.

S38. Ans.(b)

Sol. Zero tillage is an agricultural practice where the soil is left undisturbed or minimally disturbed during the planting of crops. It has gained success primarily due to the use of herbicides. Here's a brief explanation:

Herbicides: In zero tillage, the use of herbicides is crucial for controlling weeds without the need for extensive soil tillage. By applying herbicides, farmers can suppress or eliminate weeds, preventing them from competing with crops for nutrients, water, and sunlight.

Reduced Soil Disturbance: Zero tillage aims to reduce soil disturbance compared to conventional tillage methods. Herbicides play a key role in weed management without the need for plowing or other forms of mechanical soil disturbance.

Conservation of Soil Structure: Zero tillage helps in conserving the structure of the soil, reducing erosion, and preserving soil moisture. By relying on herbicides, farmers can manage weed growth without disrupting the soil, leading to improved overall soil health.

Cost and Time Savings: Zero tillage can result in cost and time savings for farmers, as it eliminates or reduces the need for multiple passes with tillage equipment. Herbicides contribute to the efficiency of this practice by providing effective weed control.

S39. Ans.(a)

Sol. PTO is a mechanical device that is used in the rear of the tractor's transmission.

It provides a means for transmitting power from the tractor to various implements and machinery attached to it.

The PTO is commonly used for connecting and powering equipment such as combine harvesters, mowers, threshers, and other implements.

The PTO allows these machines to be mechanically driven by the power generated by the tractor's engine.

It typically involves a rotating shaft that extends from the tractor, and this shaft can be connected to compatible equipment using a PTO driveline.

S40. Ans.(a)

Sol. A lactometer is an instrument that is used to check for the purity of milk by measuring its density. An instrument to find out the content of water in milk or to test the richness of milk is thus termed as 'lactometer'.

S41. Ans.(a)

Sol. The Norin 10 gene is associated with dwarfness in wheat.

It is a dwarfing gene that was introduced into wheat varieties to reduce plant height.

Dwarf wheat varieties with the Norin 10 gene have shorter stems and stronger culm structures, which help prevent lodging (falling over) and improve overall crop yield.

The introduction of dwarfing genes in wheat, including Norin 10, is a significant development in the Green Revolution, as it led to increased wheat yields and improved agricultural productivity.

S42. Ans.(a)

Sol. The characteristics described in the question match the Deodar tree (*Cedrus deodara*).

Deodar is a conical evergreen tree known for its distinctive dark green and silvery needles (leaves) that are spirally arranged.

The tree has broad leaves, especially when young, and lacks symmetry in its growth pattern.

Deodar is well-adapted to cool temperatures and is often found in mountainous regions with a temperate climate.

S43. Ans.(a)

Sol. Explant culture involves the isolation and cultivation of plant tissues or cells in a nutrient medium.

This technique does not involve the direct transfer of genes. Instead, it provides a platform for the regeneration and growth of plant tissues under controlled conditions.

Once the explants (tissues) are cultured and have developed into callus or other forms, genetic transformation techniques may be applied separately to introduce genes into these tissues.

S44. Ans.(a)

Sol. Pasteurization is a heat treatment process applied to milk to destroy or inactivate harmful microorganisms, including pathogenic bacteria.

The primary purpose of pasteurization is to ensure the safety of milk for human consumption by reducing the microbial load, particularly of disease-causing bacteria.

The process involves heating the milk to a specific temperature for a certain duration, effectively killing or reducing the number of pathogenic bacteria present.

Pasteurization helps extend the shelf life of milk by preventing the growth of spoilage bacteria and improving its microbiological safety.

While pasteurization does not eliminate all microorganisms, it significantly reduces the risk of milk-borne illnesses caused by pathogenic bacteria.

S45. Ans.(c)

Sol. In an adiabatic dehumidification process, when humid air passes through a desiccated cell or material, the humidity of the material decreases.

Desiccants are substances that have a high affinity for water vapor, and they can absorb moisture from the air.

As the humid air comes into contact with the desiccant material, the desiccant absorbs moisture, leading to a decrease in the humidity of the air.

Simultaneously, the process is adiabatic, meaning it occurs without the exchange of heat with the surroundings. The temperature of the air tends to increase as a result of the adiabatic process.

S46. Ans.(b)

Sol. Coromandel Catamarans:

Catamarans made up of 3-5 logs and the specialized type made of 7 logs, known as "kolamaram," are traditional fishing boats used in Tamil Nadu, particularly along the Coromandel Coast.

The term "Coromandel" refers to the coastal region in southeastern India, where these types of catamarans are commonly employed for fishing activities.

Kolamaram:

The term "kolamaram" specifically refers to a type of catamaran made of seven logs.

These specialized catamarans are used for catching flying fish in the coastal waters of Tamil Nadu.

Flying fish are known for their ability to leap out of the water and glide for considerable distances, and the design of the kolamaram catamaran is adapted to the specific requirements of flying fish catching.

S47. Ans.(b)

Sol. An organism that can tolerate a wide range of salinity levels is termed "euryhaline."

Euryhaline organisms have the ability to survive and thrive in environments with varying salt concentrations, making them adaptable to both freshwater and saltwater conditions.

This adaptability allows euryhaline organisms to inhabit estuarine environments, where the salinity can fluctuate due to the mixing of freshwater and seawater.

S48. Ans.(a)

Sol. Seed dormancy is a natural phenomenon where a viable seed is prevented from germinating even under favorable environmental conditions.

The main reason for seed dormancy is often an immature embryo.

An immature embryo is not fully developed and lacks the maturity required to initiate the process of germination.

The embryo develops within the seed during the maturation process, and until it reaches a certain level of maturity, dormancy is maintained.

S49. Ans.(a)

Sol. Loans against NWRs/ENWRS:

NWR stands for Negotiable Warehouse Receipts, and ENWRS stands for Electronic Negotiable Warehouse Receipts.

These are documents that represent ownership of agricultural commodities stored in warehouses.

Loan Limit:

Loans against the pledge or hypothecation of agricultural produce, including warehouse receipts (NWRs/ENWRS), are provided for a period not exceeding 12 months.

The loan limit for such transactions is subject to a maximum of 75 Lakh (as indicated in option a).

S50. Ans.(b)

Sol. Worker bees are female bees that are imperfectly developed for reproduction.

They possess all the maternal instincts and play crucial roles in the colony, such as foraging, nursing larvae, cleaning, and defending the hive.

Worker bees are sterile and do not lay eggs. Their primary functions involve supporting the colony's activities and ensuring its welfare.

They are equipped with various defense mechanisms, including the ability to sting intruders to protect the hive.

S51. Ans.(b)

Sol. Extension forestry refers to the practice of extending or expanding forest cover by growing trees in areas where they were not present before.

The primary purpose of extension forestry is to increase the overall forest area, contributing to afforestation and reforestation efforts.

It involves planting trees and establishing forests in regions that may have experienced deforestation, degradation, or where there was no previous forest cover.

Extension forestry plays a crucial role in enhancing environmental conservation, promoting biodiversity, and mitigating the effects of deforestation.

S52. Ans.(d)

Sol. Gouramis are a group of freshwater fish belonging to the family Osphronemidae, which includes various species like the Blue Gourami, Pearl Gourami, and others.

Gouramis possess a specialized respiratory structure known as a labyrinth organ.

The labyrinth organ allows them to breathe air directly from the atmosphere in addition to extracting oxygen from water through their gills.

This adaptation is particularly useful for gouramis in oxygen-deficient or stagnant water conditions, such as ponds and swamps.

S53. Ans.(a)

Sol. When an embryo is out (indicating advanced pregnancy) in cattle, one of the signs is the "lapsing of uterus and vagina."

Lapsing refers to the relaxation or dropping of the uterus and vagina in the pelvic area as the pregnancy progresses.

This can be observed during physical examination of the cow.

S54. Ans.(b)**Sol. Curled Toe Paralysis in Chickens:**

Curled Toe Paralysis is a condition in chickens where the toes become curled or twisted, affecting their ability to stand and walk properly.

This condition is often associated with a deficiency of Riboflavin, which is also known as Vitamin B2.

Riboflavin (Vitamin B2):

Riboflavin is a water-soluble B-vitamin that plays a crucial role in various physiological processes, including energy metabolism.

A deficiency of Riboflavin can lead to symptoms such as curled toe paralysis, growth retardation, and other developmental issues in chickens.

S55. Ans.(a)**Sol. Muga Silk:**

Muga silk is a special type of silk produced by the silkworm *Antheraea assamensis*.

The silkworm feeds on the leaves of specific plants to produce this unique and valuable silk.

Plants Used for Muga Silk Rearing:

Muga silkworms are primarily reared on the leaves of two host plants:

Som (*Machilus bombycina*)

Soalu (*Litsaea polyantha*)

These host plants provide the necessary nutrients for the Muga silkworms to spin their silk.

S56. Ans.(b)

Sol. Micropropagation is a method of plant propagation that involves the use of small tissue or part of the plant to produce multiple copies of the same plant.

It is a form of asexual or vegetative propagation that is done under controlled laboratory conditions.

The process typically involves the use of plant tissue culture techniques, where small explants (tissues) from the parent plant are cultured on a nutrient medium to induce the formation of new shoots and roots.

Micropropagation allows for the rapid production of numerous identical plants, often referred to as "clones," which can be advantageous for preserving desirable traits in crops and ornamental plants.

S57. Ans.(a)

Sol. White shrimp, also known as *Litopenaeus vannamei*, is a species of shrimp commonly cultivated in brackish water and aquaculture systems.

It is considered a high-priority brackish water fish due to several favorable characteristics:

High Growth Rate: White shrimp exhibits a rapid growth rate, making it a preferred species for aquaculture and commercial production.

Tolerance to Fluctuations in Temperature: White shrimp can tolerate a range of temperatures, including fluctuations, making it adaptable to varying environmental conditions.

The cultivation of white shrimp is widespread in brackish water environments, and its high growth rate and adaptability contribute to its popularity in aquaculture.

S58. Ans.(d)

Sol. Tail and fin rot is a bacterial infectious disease commonly observed in fish, including those in fisheries. Symptoms of tail and fin rot include disintegration of fins, the appearance of blood on the edges of fins, and fin rays becoming brittle.

The disease is caused by various bacteria, including *Aeromonas* and *Pseudomonas* species.

Infections often start at the edges of the fins and tails, leading to deterioration and rotting.

S59. Ans.(b)

Sol. Tile drainage is a method used for managing waterlogged soils and controlling the water table in areas with high water tables, hilly terrains, and under the surface.

In tile drainage, a network of underground pipes or tiles is installed beneath the soil surface to efficiently drain excess water from the soil.

These drainage tiles or pipes are laid in a pattern across the field, allowing water to be collected and transported away from the root zone of plants.

The system effectively prevents waterlogging, improves soil aeration, and promotes favorable soil conditions for plant growth.

S60. Ans.(d)

Sol. Dietary fiber, defined as the sum of lignin and polysaccharides that are not digested by the endogenous secretions of the human digestive tracts.