

CUET PG 2024 Agricultural Science Question Paper with Solutions

Time Allowed :1 Hour 45 Mins	Maximum Marks :300	Total Questions :75
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General Instructions

Read the following instructions very carefully and strictly follow them:

1. The examination duration is 105 minutes. Manage your time effectively to attempt all questions within this period.
2. The total marks for this examination are 300. Aim to maximize your score by strategically answering each question.
3. There are 75 mandatory questions to be attempted in the Agricultural Science paper. Ensure that all questions are answered.
4. Questions may appear in a shuffled order. Do not assume a fixed sequence and focus on each question as you proceed.
5. The marking of answers will be displayed as you answer. Use this feature to monitor your performance and adjust your strategy as needed.
6. You may mark questions for review and edit your answers later. Make sure to allocate time for reviewing marked questions before final submission.
7. Be aware of the detailed section and sub-section guidelines provided in the exam. Understanding these will aid in effectively navigating the exam.

1. Chromosomal aberration in which two breaks occur in a chromosome and the intercalary segment reunites in a reverse order is categorised as:

- (A) Duplication
- (B) Translocation
- (C) Inversion
- (D) Segmental duplication

Correct Answer: (c) Inversion.

Solution: An inversion is a chromosomal aberration where a segment of a chromosome is reversed end to end. This occurs when a chromosome undergoes breakage and the resulting pieces rejoin in a reversed order.

💡 Quick Tip

Inversions can affect gene function if they disrupt a gene at one of the breakpoints or change the expression of a gene near the breakpoints.

2. Mutation was first discovered by:

- (A) Muller
- (B) De Vries
- (C) Seth Wright
- (D) Stadler

Correct Answer: (b) De Vries.

Solution: Hugo de Vries was instrumental in the discovery of mutation, which he observed as sudden changes in the evening primrose, leading to new characteristics in subsequent generations.

 Quick Tip

De Vries' mutation theory was a pivotal moment in genetics, highlighting the role of sudden genetic changes in evolution.

3. In which ministry, the Genetic Engineering Appraisal Committee (GEAC) was set up?

- (A) Ministry of Environment, Forest and Climate Change
- (B) Ministry of Agriculture and Farmers Welfare
- (C) Ministry of Consumer Affairs, Food and Public Distribution
- (D) Ministry of Corporate Affairs

Correct Answer: (a) Ministry of Environment, Forest and Climate Change.

Solution: The GEAC is established under the Ministry of Environment, Forest and Climate Change, tasked with overseeing the safe use of genetic engineering technology and genetically modified organisms in India.

 Quick Tip

Understanding the regulatory frameworks is essential for any research involving genetic modification, ensuring environmental and public health safety.

4. Which one of the following varieties is hybrid in rice crop?

- (A) IR-64
- (B) CSR-30
- (C) PRH-10
- (D) Pusa 44

Correct Answer: (c) PRH-10.

Solution: PRH-10 is recognized as a hybrid variety of rice, specifically developed to increase yield and resilience to various environmental stressors.

 Quick Tip

Hybrid varieties such as PRH-10 are crucial for achieving food security and sustainable agriculture in regions with high rice consumption.

5. Match List-I with List-II

List-I (Scientist)

- (A) T.H. Morgan
- (B) Kornberg
- (C) Nathan and Smith
- (D) Paul Berg

List-II (Contribution)

- (I) Restriction endonucleases
- (II) Recombinant DNA
- (III) Sex-linked inheritance
- (IV) DNA polymerase

Choose the correct answer from the options given below:

- (a) (A) - (I), (B) - (II), (C) - (III), (D) - (IV)
- (b) (A) - (I), (B) - (III), (C) - (II), (D) - (IV)
- (c) (A) - (I), (B) - (II), (C) - (IV), (D) - (III)
- (d) (A) - (III), (B) - (IV), (C) - (I), (D) - (II)

Correct Answer: (d) (A) - (III), (B) - (IV), (C) - (I), (D) - (II).

Solution: This match highlights the fundamental contributions of each scientist to genetics and molecular biology. T.H. Morgan's research on sex-linked inheritance provided important insights into the genetic basis of sex-linked disorders. Arthur Kornberg was awarded the Nobel Prize for his discovery of DNA polymerase, which is crucial for DNA replication. Nathan and Smith discovered the restriction endonucleases, essential for molecular cloning techniques, while Paul Berg developed the first methods of recombinant DNA technology, paving the way for genetic engineering.

 Quick Tip

Each of these scientific discoveries has played a pivotal role in advancing our understanding of biology and has applications in medicine, agriculture, and biotechnology. Understanding these contributions helps appreciate the complexities of genetic manipulations and their ethical, legal, and social implications.

6. Which of the following statements about seed are correct?

- (A) Progeny of nucleus seed is breeder seed.
- (B) TZ test is for evaluation of field performance of seed
- (C) Seed rate of wheat is 100 kg/ha
- (D) Tobacco is the example of smallest seed

Choose the correct answer from the options given below:

- (a) (A), (B) and (D) only.
- (b) (A), (B) and (C) only.
- (c) (A), (B), (C) and (D).
- (d) (A), (C) and (D) only.

Correct Answer: (d) (A), (C) and (D) only.

Solution: Correct statements include the progeny of nucleus seed being breeder seed, TZ test evaluating seed viability not field performance, and the typical seed rate for wheat being 100 kg/ha. Tobacco is not the smallest seed; that characteristic is more commonly associated with plants like orchids.

 Quick Tip

Understanding seed biology and cultivation requirements is fundamental for agricultural production and management.

7. Which of the following statements about Hammerling's experiment on Acetabularia is/are correct?

- (A) It demonstrates that Acetabularia is a unicellular organism.
- (B) It demonstrates the role of cytoplasm in heredity.
- (C) It demonstrates the role of nucleus in heredity.
- (D) It demonstrates the role of cytoplasm in determining rhizoid shape.

Choose the correct answer from the options given below:

- (a) (A) and (D) only.
- (b) (A) only.
- (c) (B) only.
- (d) (C) only.

Correct Answer: (d) (C) only.

Solution: Hammerling's experiments with Acetabularia demonstrated the role of the nucleus in heredity, specifically how the nucleus controls the development and regeneration of the cell. The experiment did not focus on the cytoplasm's role in heredity or shape determination.

💡 Quick Tip

Hammerling's work was crucial in understanding the nuclear control in cell processes, emphasizing the nucleus's central role in genetic information and cellular functions.

8. Linkage drag is the phenomenon in which-

- (a) The undesirable genes also get transferred along with the desirable genes.
- (b) Only the desirable genes from donor parent get transferred.
- (c) The frequency of recombination between the desired and unwanted genes is increased.
- (d) The unwanted genes are eliminated from the population.

Correct Answer: (a) The undesirable genes also get transferred along with the desirable genes.

Solution: Linkage drag occurs when undesirable genes are linked to desirable genes on the same chromosome and are consequently transferred together during breeding, affecting the overall quality of the resulting plants or animals.

💡 Quick Tip

Understanding linkage drag is important for geneticists to develop strategies to break these linkages through breeding programs, enhancing desirable traits while minimizing unwanted ones.

9. In a pea flower, five petals are arranged in a specialised manner with one posterior, two lateral and two anterior. These are named as:

- (a) Wing, Keel and Standard
- (b) Keel, Wings and Standard
- (c) Standard, Wings and Keel
- (d) Wing, Standard and Keel

Correct Answer: (c) Standard, Wings and Keel.

Solution: In a pea flower, the petal arrangement is named as Standard (one posterior), Wings (two lateral), and Keel (two anterior). This structure is typical of flowers in the Fabaceae family.

💡 Quick Tip

This typical flower structure aids in pollination, with the keel protecting reproductive parts and the standard and wings aiding in attracting pollinators.

10. Linkage equilibrium can be achieved by:

- (a) Selfing
- (b) Random mating
- (c) Sibling crossing
- (d) Crossing

Correct Answer: (b) Random mating.

Solution: Linkage equilibrium is more likely to be achieved through random mating, which increases genetic diversity and helps to redistribute genes across the population, breaking up linkage disequilibrium.

 Quick Tip

Random mating is a crucial concept in population genetics to maintain genetic health and variability, reducing the likelihood of genetic diseases.

11. What is the term for the negative effect that a host plant has on the growth of an insect-pest that feeds on it?

- (a) Antixenosis
- (b) Antibiosis
- (c) Non-preference
- (d) Tolerance

Correct Answer: (b) Antibiosis.

Solution: Antibiosis refers to the negative effect a plant has on the growth and development of an insect-pest feeding on it, typically through the production of toxic compounds.

 Quick Tip

Antibiosis is an important defense mechanism for plants to deter pest populations and protect their growth.

12. Which of the following could be the valid value(s) of the correlation coefficient between two variables?

- (a) -1
- (b) +1
- (c) -2
- (d) +2

Choose the correct answer from the options given below.

- (a) (A) only

- (b) (A) and (B) both
- (c) (A), (B), (C) and (D)
- (d) (B) only.

Correct Answer: (b) (A) and (B) both.

Solution: The correlation coefficient can only range from -1 to +1. Any values outside this range are invalid. Therefore, both -1 and +1 are valid values.

 Quick Tip

The correlation coefficient measures the strength and direction of a linear relationship between two variables, with -1 and +1 representing perfect negative and positive correlations, respectively.

13. Conservation Agriculture includes adoption of -

- (a) burning of crop residues to manage pests.
- (b) minimum tillage
- (c) crop rotations
- (d) mulching

Choose the correct answer from the options given below

- (a) (A), (B) and (D) only.
- (b) (A), (B) and (C) only.
- (c) (A), (B), (C) and (D)
- (d) (B), (C) and (D) only.

Correct Answer: (d) (B), (C), and (D) only.

Solution: Conservation Agriculture involves sustainable practices such as minimum tillage, crop rotations, and mulching. Burning crop residues is not part of conservation agriculture.

 Quick Tip

Conservation agriculture focuses on soil health and sustainable farming practices to reduce environmental impact and enhance crop productivity.

14. Diammonium phosphate contains-

- (a) 46% N and 18% P₂O₅
- (b) 18% N and 46% P₂O₅
- (c) 20% N and 20% P₂O₅
- (d) 46% N and 20% P₂O₅

Correct Answer: (b) 18% N and 46% P₂O₅.

Solution: Diammonium phosphate (DAP) is a commonly used fertilizer with 18% nitrogen (N) and 46% phosphorus (P₂O₅).

 Quick Tip

DAP is rich in phosphorus, which supports root development and enhances plant growth.

15. What is the approximate composition of biogas, generated after decomposition of bio-degradable agricultural waste?

- (a) 55-65% of methane, 35-44% of carbon dioxide and traces of other gases
- (b) 35-44% of methane, 55-65% of carbon dioxide and traces of other gases.
- (c) 50% of methane and 50% of carbon dioxide and no other gases.
- (d) 25-35% of methane, 65-75% of ammonia and traces of other gases.

Correct Answer: (a) 55-65% of methane, 35-44% of carbon dioxide and traces of other gases.

Solution: Biogas, generated from the anaerobic decomposition of agricultural waste, typically contains 55-65% methane, 35-44% carbon dioxide, and small amounts of other gases like hydrogen sulfide.

 Quick Tip

Biogas is a renewable energy source with methane as the primary component, used for heating, cooking, and electricity generation.

16. The Food Corporation of India was established in which year?

- (a) 1975
- (b) 1955
- (c) 1965
- (d) 1967

Correct Answer: (c) 1965.

Solution: The Food Corporation of India (FCI) was established in 1965 with the objective of ensuring the procurement, storage, and distribution of food grains across India.

💡 Quick Tip

FCI plays a crucial role in maintaining food security and managing the distribution of essential food commodities in India.

17. Which one of the following is a good example of subsistence farming?

- (a) Organic farming
- (b) Commercial farming
- (c) Extensive and Intensive farming
- (d) Shifting cultivation

Correct Answer: (d) Shifting cultivation.

Solution: Shifting cultivation is a traditional method of farming, primarily for subsistence, where land is cleared for agriculture and then abandoned after a few years. It is mainly practiced in regions with low population density.

💡 Quick Tip

Shifting cultivation involves moving cultivation to new areas after exhausting the soil's nutrients, typically practiced by indigenous communities.

18. What was India's food grain production in 2021-22?

- (a) 310.7 million tonnes
- (b) 315.7 million tonnes
- (c) 297.5 million tonnes
- (d) 305.7 million tonnes

Correct Answer: (b) 315.7 million tonnes.

Solution: India's food grain production in 2021-22 was recorded at 315.7 million tonnes, marking a significant increase over previous years. This was attributed to better agricultural practices and favorable monsoon conditions.

💡 Quick Tip

Food grain production is a key factor in ensuring national food security, and India's increased production is vital for supporting its large population.

19. Which of the following conditions characterizes disguised unemployment?

- (a) When the marginal productivity of labour is greater than one

- (b) When the marginal productivity of labour is zero
- (c) When the marginal productivity of labour is greater than two
- (d) When the marginal productivity of labour is greater than one and less than two

Correct Answer: (b) When the marginal productivity of labour is zero.

Solution: Disguised unemployment occurs when additional workers are employed, but their marginal productivity is zero, meaning they do not contribute to increased output. This is common in sectors with excessive labor.

 Quick Tip

Disguised unemployment is a form of hidden unemployment where more people are employed than necessary for the task at hand, resulting in wasted resources.

20. Sequence the principal stages of biological nitrogen fixation in their correct order of occurrence.

- (A) Formation of infection thread
- (B) Rhizobium multiply to colonize.
- (C) Curling of root hair.
- (D) Differentiation of cortical cells into nitrogen fixing cells

Choose the correct answer from the options given below.

- (a) (B), (C), (A), (D)
- (b) (A), (B), (C), (D)
- (c) (B), (A), (D), (C).
- (d) (C), (B), (D), (A)

Correct Answer: (b) B), (C), (A), (D).

Solution: The correct sequence for biological nitrogen fixation is: 1. Rhizobium multiply to colonize the root. 2. Curling of root hair happens next. 3. Formation of infection thread follows. 4. Finally, differentiation of cortical cells into nitrogen-fixing cells occurs.

 Quick Tip

Biological nitrogen fixation is essential for enriching soil with nitrogen, a key nutrient for plants, especially legumes.

21. Match List-I with List-II

List-I

(Millet) (Botanical name)

(A). Barnyard millet—(I). *Paspalum scrobiculatum*

(B) Kodo millet (II). *Setaria italica*

(C). Foxtail millet —(III). *Echinochloa frumentacea*

(D). Finger millet —(IV). *Eleusine coracana*

Options:

(a) (A)- (I), (B) - (II), (C) - (III), (D) - (IV)

(b) (A)- (III), (B) - (I), (C) - (II), (D) - (IV)

(c) (A)-(I), (B) - (II), (C) - (IV), (D) - (III)

(d) (A)- (III), (B)- (IV), (C) - (I), (D) - (II)

Correct Answer: (b) (A)- (III), (B) - (I), (C) - (II), (D) - (IV)

Solution: The botanical names are correctly matched with their respective millet types in option (b). Barnyard millet is *Echinochloa frumentacea*, Kodo millet is *Paspalum scrobiculatum*, Foxtail millet is *Setaria italica*, and Finger millet is *Eleusine coracana*.

 Quick Tip

Memorize the botanical names of common millets as they often appear in agricultural science exams.

22. Which of the following statement is not true for NABARD?

Options:

(a) NABARD provides loans to individuals

(b) NABARD encourages research work related to agriculture and rural development

(c) NABARD supervises Cooperative Banks and Regional Rural Banks

(d) The Cooperative Development Fund (CDF) was established by NABARD on February 2nd, 1993

Correct Answer: (a) NABARD provides loans to individuals

Solution: NABARD does not provide loans directly to individuals; instead, it finances and supports various projects through institutions. The other statements are correct about NABARD.

 Quick Tip

Understand the role of NABARD in agricultural financing and rural development to address similar questions in exams.

23. Which of the following is a promising chemical for flower induction in mango?

Options:

- (a) 24D
- (b) Ethylene
- (c) Gibberellic acid
- (d) Paclobutrazol

Correct Answer: (b) Ethylene

Solution: Ethylene is known for promoting flowering in various fruit trees, including mango, by affecting the hormonal balance within the plant.

💡 Quick Tip

Ethylene is effective in inducing flowering but should be used carefully to avoid excessive fruit drop.

24. What is the name of the microbial spray, consisting of blend of seven fungi, developed by ICAR-IARI, New Delhi for the insitu accelerated degradation of paddy straw or parali?

Options:

- (a) Pusa Composter
- (b) Pusa Biogranule
- (c) Pusa Decomposer
- (d) Pusa Bio-Composter

Correct Answer: (c) Pusa Decomposer

Solution: The Pusa Decomposer is a microbial spray developed by ICAR-IARI for the rapid decomposition of paddy straw in the field, helping to manage crop residue effectively.

💡 Quick Tip

Pusa Decomposer can significantly reduce air pollution caused by the burning of paddy straw.

25. Match List-I with List-II

List-I [List-n

(Classes of Seed) —(Colour of Tag)

- (A). Breeder Seed (I). Green Opal**
- (B) Foundation Seedli(II) Azure Blue**
- (C). Certified Seed ((III). White**

(D). T.L. Seed —(IV). Golden yellow—

Options:

- (a) (A)-(II), (B) - (I), (C) - (III), (D) - (IV)
- (b) (A)-(IV), (B) - (III), (C) - (II), (D) - (I)
- (c) (A)- (I), (B)- (II), (C) - (IV), (D) - (III)
- (d) (A)-(III), (B) - (IV), (C) - (I), (D) - (II)

Correct Answer: (b) (A)- (IV), (B) - (III), (C) - (II), (D) - (I)

Solution: The classes of seeds are matched correctly with their tag colors in option (b). Breeder Seed is Golden yellow, Foundation Seed is White, Certified Seed is Azure Blue, and T.L. Seed is Green Opal.

 Quick Tip

Knowing the tag colors associated with different classes of seeds is crucial for handling and certification processes in agriculture.

26. The number of replications are equal to number of treatments in the

Options:

- (a) Latin square design
- (b) RBD
- (c) CRBD
- (d) SPD

Correct Answer: (a) Latin square design

Solution: In the Latin square design, the number of replications is equal to the number of treatments, ensuring that each treatment appears exactly once in each row and column.

 Quick Tip

The Latin square design is used to control for two blocking factors while testing more than one factor at a time.

27. Match List-I with List-II

List List-II

Disease (Causal organism)

(A). Black rust (I). *Puccinia recondita*

.(B) Yellow rust (II). *Cercospora arach/d/colé*

- (C). Brown rust (III). *Puccinia graminis*
(D). Tikka disease of groundnut—(IV). *Puccinia striiformis*

Options:

- (a) (A)- (III), (B) - (II), (C) - (I), (D) - (IV)
(b) (A)- (I), (B) - (III), (C) - (II), (D) - (IV)
(c) (A)- (I), (B) - (II), (C) - (IV), (D) - (III)
(d) (A)- (III), (B)- (IV), (C) - (I), (D) - (II)

Correct Answer: (d) (A)- (III), (B)- (IV), (C) - (I), (D) - (II)

Solution: The diseases are correctly matched with their causal organisms in option (d). Black rust is caused by *Puccinia graminis*, Yellow rust by *Puccinia striiformis*, Brown rust by *Puccinia recondita*, and Tikka disease by *Cercospora arachidicola*.

 Quick Tip

Understanding the causal organisms of common crop diseases can help in better management and prevention strategies.

28. Bacterial cells are more resistant to osmotic shock than eukaryotic cells due to the

Options:

- (a) cell wall composed of cellulose
(b) presence of osmoregulatory porins
(c) cell wall shows selective permeability.
(d) cell wall composed of peptidoglycan

Correct Answer: (d) cell wall composed of peptidoglycan

Solution: The peptidoglycan layer in the bacterial cell wall is primarily responsible for its increased resistance to osmotic shock compared to eukaryotic cells, which typically do not have such a structured cell wall.

 Quick Tip

The structure of the cell wall can greatly influence a cell's susceptibility to environmental stresses.

29. Which of the following is the correct sequence of reagents given below used in the Gram staining process?

- (A). Iodine
- (B). Crystal violet
- (C). Safranin
- (D). Alcohol

Options:

- (a) (A), (B), (C), (D)
- (b) (A), (C), (B), (D)
- (c) (B), (A), (D), (C)
- (d) (C), (B), (D), (A)

Correct Answer: (c) (B), (A), (D), (C)

Solution: The correct sequence for the Gram staining process starts with Crystal violet, followed by Iodine, then Alcohol for decolorization, and finally counterstained with Safranin. This method distinguishes between Gram-positive and Gram-negative bacteria.

 Quick Tip

Understanding the correct sequence of staining in microbiological techniques is crucial for accurate diagnosis and research.

30. Which of the following terms specifically refers to the practice of rearing stingless bees?

Options:

- (a) Nesting
- (b) Apiculture
- (c) Meliponiculture
- (d) Iridiculture

Correct Answer: (c) Meliponiculture

Solution: Meliponiculture specifically refers to the rearing and management of stingless bees, a practice distinct from apiculture, which is the broader term for beekeeping.

 Quick Tip

Specializing in meliponiculture can be beneficial for sustainable beekeeping practices and biodiversity conservation.

31. Consider the following statements regarding economic importance of fungi and

choose the correct statements-

- (A). Extract of the sclerotia of *Claviceps purpurea* is used to produce ergot drug
- (B). *Agaricus campestris* is a fungus which is edible.
- (C). Aflatoxin, a powerful toxin is produced by the *Aspergillus*
- (D). *Saccharomyces cerevisiae* is the source of enzyme invertase.

Options:

- (a) (A), (B) and (D) only.
- (b) (A), (B) and (C) only.
- (c) (A), (B), (C) and (D)
- (d) (B), (C) and (D) only.

Correct Answer: (c) (A), (B), (C) and (D)

Solution: All statements regarding the economic importance of fungi are correct. *Claviceps purpurea* is used in medicinal compounds, *Agaricus campestris* is an edible mushroom, Aflatoxin is indeed a toxin produced by *Aspergillus* species, and *Saccharomyces cerevisiae* produces invertase.

 Quick Tip

Understanding the beneficial and harmful roles of fungi can help in fields like pharmacology and food science.

32. Match List-I with List-II

List-I (Microorganism)	List-II (Disease)
(A) <i>Colletotrichum falcatum</i>	(III) Red rot of sugarcane
(B) <i>Phytophthora infestans</i>	(I) Late blight of potato
(C) <i>Sclerospora graminicola</i>	(II) Green ear of bajra
(D) <i>Ustilago nuda</i> var. <i>tritici</i>	(IV) Loose smut of wheat

Options:

- 1. (A) - (I), (B) - (II), (C) - (III), (D) - (IV)
- 2. (A)- (II), (B) - (I), (C) - (III) ,(D) - (IV)
- 3. (A)- (1), (B) - (II), (C) - (IV), (D) - (11I)
- 4. (A)-(III), (B) - (I), (C) - (II), (D) -(IV)

Correct Answer: (d) (A)-(III), (B) - (I), (C) - (II), (D) -(IV)

Solution: Correct matching is as follows: *Colletotrichum falcatum* causes red rot of sugarcane, *Phytophthora infestans* causes late blight of potato, *Sclerospora graminicola* causes green ear of bajra, and *Ustilago nuda* var. *tritici* causes loose smut of wheat.

 Quick Tip

Recognizing the causal agents of plant diseases is crucial for effective disease management and prevention in agriculture.

33. Who did work on the recurrence of wheat rusts in India?

Options:

1. T. Sadasivan
2. K.C. Mehta
3. Y.L. Nene
4. R.N. Singh

Correct Answer: (b) K.C. Mehta

Solution: K.C. Mehta was a prominent researcher who worked extensively on the problem of wheat rusts in India, contributing significantly to the understanding and management of this agricultural issue.

 Quick Tip

Studying historical figures in agricultural science can provide insights into how past challenges were addressed and overcome.

34. Match List-I with List-II

List-I (Disease)	List-II (Symptom)
(A) Downy mildew	(III) Cottony growth on the host surface
(B) Blight	(II) Angular and elongated spots appearing on the veins on the lower surface of the leaf
(C) Canker	(I) Dead areas on the stem bark of woody trees
(D) Anthracnose	(IV) Burnt appearance

Options:

1. (A)- (II), (B)- (I), (C) - (III), (D) - (IV)
2. (A)-(I), (B)- (III), (C)- (I), (D)- (IV)
3. (A)- (1), (B)-(II), (C)- (IV), (D) - (III)
4. (A)- (III), (B)-(IV), (C)- (1), (D) (II)

Correct Answer: (d) (A)- (III), (B)-(IV), (C)- (1), (D) (II)

Solution: Correct symptom matching is: Downy mildew shows cottony growth on the host surface, Blight presents a burnt appearance, Canker leads to dead areas on the stem bark of woody trees, and Anthracnose results in angular and elongated spots appearing on the veins on the lower surface of the leaf.

 Quick Tip

Understanding the symptoms associated with different plant diseases aids in accurate diagnosis and effective management.

35. Which of the following statements about extent of infection and perpetuation of pathogen are correct?

- (A). Disease which is confined to a particular part or organ is known as systemic disease.
- (B). Arhar wilt is a soil-borne disease
- (C). Smut disease of cereals are seed-borne
- (D). Mildew and rusts are air-borne

Options:

- (A), (C) and (D) only.
- (B) and (D) only.
- (A), (B) and (D) only.
- (B), (C) and (D) only.

Correct Answer: (d) (B), (C) and (D) only.

Solution: The correct statements regarding the extent of infection and perpetuation of pathogens are that Arhar wilt is soil-borne, smut diseases of cereals are seed-borne, and mildew and rusts are air-borne. The statement about systemic diseases is incorrect; they affect the whole organism, not just a part.

 Quick Tip

Distinguishing how diseases spread and persist can guide effective control strategies in crop management.

36. Which of the following statements related to disease management is/are correct

- (A). Biological management of disease make use of, hyperparasitism
- (B). Thiram is a contact fungicide
- (C). Bordeaux mixture consists of copper sulphate, ammonium carbonate and water.
- (D). Crop rotation is a prophylactic measure of disease management

Options:

- 1. (A), (B) and (D) only.
- 2. (A), (B) and (C) only
- 3. (A), (B), (C) and (D)
- 4. (B), (C) and (D) only.

Correct Answer: (a) (A), (B) and (D) only.

Solution: The correct statements are that biological management of diseases can utilize hyperparasitism, Thiram is indeed a contact fungicide, and crop rotation is a prophylactic measure.

The Bordeaux mixture is incorrect as stated; it contains copper sulphate, lime, and water, not ammonium carbonate.

 Quick Tip

Accurate knowledge of fungicides and biological control measures is essential for effective disease management in agriculture.

37. Match List-I with List-II

List-I (Hormone)	List-II (Physiological Effect)
(A) Cytokinin	(III) Promotes lateral shoot growth
(B) Auxin	(II) Prevent leaf and fruit drop at early stage
(C) Gibberellin	(I) Increase stem length
(D) Absciscic acid	(IV) Stimulates stomata closing

Options:

- 1.(A)- (III), (B) - (II), (C)- (I), (D) - (IV)
2. (A)- (I), (B) - (III), (C) - (II), (D) - (IV)
- 3.(A)- (I), (B) - (II), (C) - (IV), (D) - (III)
- 4.(A)-(III), (B) - (IV), (C) - (I), (D) - (II)

Correct Answer: (a) (A)- (I), (B) - (II), (C) - (IV), (D) - (III)

Solution: Correct matching of hormones and their physiological effects is: Cytokinins increase stem length, Auxins prevent leaf and fruit drop, Gibberellins stimulate stem elongation and growth, and Absciscic acid promotes stomata closing.

 Quick Tip

Understanding the roles of different plant hormones can help in their application for growth regulation and stress responses.

38. Normal seedlings upon putting in dark, for few days, get converted into white like albinos. Which of the following terms will you use to describe them?

Options:

1. Mutated
2. Embolised
3. Etiolated
4. Bolted

Correct Answer: (c) Etiolated

Solution: When seedlings are grown in the absence of light, they become etiolated, characterized by elongated, pale stems and small, unexpanded leaves due to lack of chlorophyll development.

 Quick Tip

Recognizing signs of etiolation can help in ensuring that plants receive adequate light for proper growth and development.

39. Horizontal growth of seedling, swelling of axis and apical hook formation of dicot seedlings are associated with

Options:

1. Photoperiodism
2. Vernalisation
3. Ethylene
4. Cytokinin

Correct Answer: (c) Ethylene

Solution: Ethylene is involved in various aspects of growth regulation including the horizontal growth of seedlings, stem swelling, and apical hook formation in dicot seedlings. These effects help the seedling break through the soil surface.

 Quick Tip

Ethylene's role in plant stress responses and developmental processes makes it a critical hormone for study in plant biology and agriculture.

40. Which of the following statements is/are correct about photosynthesis ?

- (A). Liberation of oxygen when green cells are exposed to sun light in presence of suitable acceptor is known as emerson effect
- (B). Green light is not effective for photosynthesis
- (C). When CO₂ is added to PEP, the first stable product is oxaloacetate.
- (D). PEP is the primary CO₂ acceptor in C₄ plants

Options:

- (A), (B) and (D) only.
- (A), (B) and (C) only.
- (A), (B), (C) and (D)
- (B), (C) and (D) only.

Correct Answer: (d) (B), (C) and (D) only.

Solution: The correct statements about photosynthesis are that green light is less effective for photosynthesis, when CO₂ is added to PEP the first stable product is oxaloacetate, and PEP is the primary CO₂ acceptor in C₄ plants. The Emerson effect refers to the enhancement of photosynthesis when red and far-red light are used together, not the liberation of oxygen alone.

 Quick Tip

Understanding the specifics of photosynthesis, including light absorption and carbon fixation pathways, is crucial for fields like plant biology and agricultural sciences.

41. 'Indian Farming' magazine is a publication of

- (a) IARI, New Delhi
- (b) IVRI, Izatnagar
- (c) CRRI, Cuttak
- (d) ICAR, New Delhi

Correct Answer: (d) ICAR, New Delhi

Solution: 'Indian Farming' magazine is published by the Indian Council of Agricultural Research (ICAR), headquartered in New Delhi.

 Quick Tip

ICAR is a central body responsible for coordinating agricultural education and research in India.

42. In which crop and year was the first All India Co-ordinated Research Project set up in India with the assistance of Rockefeller Foundation of the USA?

- (a) Bajra, 1927
- (b) Wheat, 1957
- (c) Maize, 1957
- (d) Maize, 1967

Correct Answer: (c) Maize, 1957

Solution: The first All India Co-ordinated Research Project was established for maize in the year 1957, funded by the Rockefeller Foundation.

 Quick Tip

Collaborative research projects enhance crop yields and agricultural practices through focused and coordinated efforts.

43. Match List-I with List-II

List-I (Institute)	List-II (Year of Establishment)
(A) Institute for Rural Management	(1) 1979
(B) National Academy for Agricultural Research Management	(3) 1976
(C) National Institute of Agricultural Extension Management	(2) 1987
(D) National Institute of Agricultural Marketing	(4) 1988

Options:

- (a) (A) - (1), (B) - (2), (C) - (3), (D) - (4)
- (b) (A) - (1), (B) - (3), (C) - (2), (D) - (4)
- (c) (A) - (1), (B) - (2), (C) - (4), (D) - (3)
- (d) (A) - (3), (B) - (4), (C) - (1), (D) - (2)

Correct Answer: (b) (A) - (1), (B) - (3), (C) - (2), (D) - (4)

Solution: The correct matches for the establishments are: Institute for Rural Management was established in 1979, National Academy for Agricultural Research Management in 1987, National Institute of Agricultural Extension Management in 1976, and National Institute of Agricultural Marketing in 1988.

 Quick Tip

Awareness of the foundational years of agricultural institutes can provide context on the evolution of agricultural education and training in India.

44. Which of the following is not a measure of dispersion?

- (a) Range
- (b) Mean deviation
- (c) Standard deviation
- (d) Mode

Correct Answer: (d) Mode

Solution: The mode, being a measure of central tendency, is not used to describe dispersion. It indicates the most frequently occurring data point in a dataset.

 Quick Tip

Understanding different statistical measures helps in accurately interpreting data and results in research and applied sciences.

45. In a normally distributed population, the number of observations falling within the range $\text{Mean} \pm \text{S.D.}$ is approximately:

- (a) 16%
- (b) 32%
- (c) 68%

(d) 95%

Correct Answer: (c) 68%

Solution: In a normal distribution, about 68% of the data lies within one standard deviation of the mean.

 Quick Tip

The rule of 68-95-99.7 (Empirical Rule) is fundamental in statistics for understanding the distribution of data points.

46. While conducting a chi-square test to examine the independence of attributes in an $m \times n$ contingency table, what formula determines the degree of freedom?

(a) $m(n - 1)$

(b) $n(m - 1)$

(c) $(n - 1)$

(d) $(m - 1)(n - 1)$

Correct Answer: (d) $(m - 1)(n - 1)$

Solution: The degrees of freedom for a chi-square test in an $m \times n$ contingency table are calculated using the formula $(m - 1)(n - 1)$.

 Quick Tip

Properly determining degrees of freedom is crucial for the correct interpretation of chi-square tests in statistics.

47. Arrange the following steps in the correct sequence for implementing an agricultural extension programme

(A) Developing extension materials

(B) Implementing the programme

(C) Evaluating the programme

(D) Conducting needs assessment

Options:

(a) (A), (B), (C), (D)

(b) (A), (C), (D), (B)

(c) (B), (A), (D), (C)

(d) (D), (A), (B), (C)

Correct Answer: (d) (D), (A), (B), (C)

Solution: The logical order for implementing an agricultural extension programme begins with conducting needs assessment, followed by developing materials, implementing the programme,

and finally evaluating it.

 Quick Tip

Effective agricultural extension programs are built on a strong understanding of the community's needs and ongoing evaluation.

48. Diffusion of an innovation occurs through a step process. Arrange the following stages in the adoption process in sequential order

- (A) Decision
- (B) Implementation and Confirmation
- (C) Persuasion
- (D) Knowledge

Options:

- (a) (A), (B), (C), (D)
- (b) (C), (B), (A), (D)
- (c) (D), (C), (A), (B)
- (d) (C), (B), (D), (A)

Correct Answer: (c) (D), (C), (A), (B)

Solution: The adoption process for innovations typically follows this sequence: Knowledge acquisition, Persuasion, Decision making, and then Implementation and Confirmation.

 Quick Tip

Understanding the stages of adoption can help in effectively spreading new technologies and practices in various fields.

49. Which of the following marketing concepts involves dividing a market into distinct groups of buyers based on their needs, characteristics, or behavior, who may require different products or marketing mixes?

- (a) Product differentiation
- (b) Market segmentation
- (c) Market targeting
- (d) Market positioning

Correct Answer: (b) Market segmentation

Solution: Market segmentation involves dividing the market into distinct groups based on varying needs and behaviors, allowing for targeted marketing strategies.

 Quick Tip

Segmenting a market allows businesses to focus their efforts more efficiently and tailor their products to better meet consumer demands.

50. Match List-I with List-II

List-I (Scientist)	List-II (Scientific Contribution)
(A) Hans Krebs	(1) Citric acid cycle
(B) P. Mitchell	(2) Chemiosmotic hypothesis
(C) W. M. Stanley	(4) Crystallization of Tobacco Mosaic Virus
(D) M. Calvin	(3) C ₃ cycle

Options:

- (a) (A) - (2), (B) - (1), (C) - (3), (D) - (4)
- (b) (A) - (1), (B) - (3), (C) - (2), (D) - (4)
- (c) (A) - (1), (B) - (2), (C) - (4), (D) - (3)
- (d) (A) - (3), (B) - (4), (C) - (1), (D) - (2)

Correct Answer: (c) (A) - (1), (B) - (2), (C) - (4), (D) - (3)

Solution: The correct matches are: Hans Krebs is known for the Citric acid cycle, P. Mitchell for the Chemiosmotic hypothesis, W. M. Stanley for the crystallization of Tobacco Mosaic Virus, and M. Calvin for the C₃ cycle.

 Quick Tip

These scientists and their discoveries have been foundational to modern biochemistry and molecular biology.

51. The following are the steps of chemiosmotic ATP synthesis in the light reaction. Arrange them in correct order of their occurrence-

- (A) H⁺ diffuse through ATP synthetase and it makes ATP.
- (B) Electrons from PS-II pass along electron transport chain
- (C) H⁺ concentration gradient generates across the membrane
- (D) Light excites electrons in PS-I

Options:

- (a) (A), (B), (C), (D)
- (b) (D), (B), (C), (A)
- (c) (B), (A), (D), (C)
- (d) (C), (B), (D), (A)

Correct Answer: (b) (D), (B), (C), (A)

Solution: The correct sequence is light excitation in PS-I, electron transport from PS-II, generation of a proton gradient, and ATP synthesis by ATP synthase.

💡 Quick Tip

Understanding the sequence of light reactions is fundamental for comprehending how plants convert light energy into chemical energy.

52. Consider the following statements and choose the correct statements

- (A) Sugarcane has kranz anatomy in their leaves
- (B) Maize is a C₄ plant
- (C) Photolysis of water in photosynthesis require Mg²⁺ ions
- (D) C₄ pathway of photosynthetic CO₂ fixation was discovered by Hatch and Slack

Options:

- (a) (A), (B) and (D) only.
- (b) (A), (B) and (C) only
- (c) (A), (B), (C) and (D)
- (d) (B), (C) and (D) only.

Correct Answer: (a) (A), (B) and (D) only.

Solution: Sugarcane has kranz anatomy, Maize is a C₄ plant, and the C₄ pathway was indeed discovered by Hatch and Slack. The statement about Mg²⁺ ions is incorrect; it is Mn²⁺ that is involved in water photolysis.

💡 Quick Tip

Clarifying the roles of minerals in photosynthesis can prevent misconceptions in plant biochemistry.

53. Match List-I with List-II

List-I (Element)	List-II (Biological Function)
(A) Iron	(1) Pollen germination
(B) Zinc	(2) Photolysis of water
(C) Boron	(3) Required in chlorophyll biosynthesis
(D) Manganese	(4) IAA biosynthesis

Options:

- (a) (A) - (1), (B) - (2), (C) - (3), (D) - (4)
- (b) (A) - (1), (B) - (3), (C) - (2), (D) - (4)
- (c) (A) - (1), (B) - (2), (C) - (4), (D) - (3)
- (d) (A) - (3), (B) - (4), (C) - (1), (D) - (2)

Correct Answer: (d) (A) - (3), (B) - (4), (C) - (1), (D) - (2)

Solution: Iron is essential for chlorophyll biosynthesis, Zinc for IAA biosynthesis, Boron for pollen germination, and Manganese is crucial for the photolysis of water in photosynthesis.

 Quick Tip

Each microelement plays a specific role in plant development and physiology, highlighting the complexity of plant nutrient requirements.

54. The technique of growing plants in nutrient solution, in complete absence of soil, can be employed for

- (A) Identification of essentiality of mineral elements
- (B) Commercial production of vegetables
- (C) Studying the deficiency symptoms of a particular element
- (D) Conservation of germplasm

Options:

- (a) (A), (B) and (D) only.
- (b) (A), (B) and (C) only.
- (c) (A), (B), (C) and (D)
- (d) (B), (C) and (D) only

Correct Answer: (b) (A), (B) and (C) only.

Solution: Hydroponics, the technique of growing plants in a nutrient solution without soil, is useful for studying essential mineral elements, commercial vegetable production, and identifying deficiency symptoms but not typically used for germplasm conservation.

 Quick Tip

Hydroponics allows for precise control over nutrient delivery, making it ideal for experimental and commercial horticulture.

55. Certain bacteria living in the soil convert nitrates into nitrites and then to free nitrogen. Such bacteria are termed as

- (a) nitrogen fixing bacteria
- (b) denitrifying bacteria
- (c) nitrifying bacteria
- (d) ammonifying bacteria

Correct Answer: (b) denitrifying bacteria

Solution: Denitrifying bacteria convert nitrates into nitrites and then to nitrogen gas, releasing it back into the atmosphere.

 Quick Tip

Understanding soil bacteria functions helps in managing soil health and fertility in agricultural practices.

56. During seed germination, its stored food is mobilised by

- (a) auxin
- (b) ethylene
- (c) gibberellin
- (d) ABA

Correct Answer: (c) gibberellin

Solution: Gibberellin plays a key role in germination, stimulating the breakdown of starches in seeds to glucose, which is used as energy for growth.

 Quick Tip

Gibberellins are essential for breaking seed dormancy and initiating germination, an important aspect of agricultural seed development.

57. Match List-I with List-II

List-I (Fertilizer)	List-II (Component/Description)
(A) Urea	(3) Organic chemical fertilizer
(B) CAN	(4) Neutral fertilizer
(C) SSP	(1) Sulphur
(D) MoP	(2) KCl

Options:

- (a) (A) - (1), (B) - (2), (C) - (3), (D) - (4)
- (b) (A) - (1), (B) - (3), (C) - (2), (D) - (4)
- (c) (A) - (1), (B) - (2), (C) - (4), (D) - (3)
- (d) (A) - (3), (B) - (4), (C) - (1), (D) - (2)

Correct Answer: (d) (A) - (3), (B) - (4), (C) - (1), (D) - (2)

Solution: Correct matches are Urea as an organic chemical fertilizer, CAN as a neutral fertilizer, SSP containing Sulphur, and MoP as KCl.

 Quick Tip

Knowing the composition and type of fertilizers helps in their appropriate application, optimizing plant growth and minimizing environmental impact.

58. Match List-I with List-II

List-I (Disorder)	List-II (Nutrient Deficiency)
(A) Black heart of Potato	(1) Calcium
(B) Interveinal chlorosis of younger leaves	(3) Iron
(C) Whip-tail in Cauliflower	(4) Molybdenum
(D) Die-back of terminal buds	(2) Boron

Options:

- (a) (A) - (I), (B) - (II), (C) - (III), (D) - (IV)
- (b) (A) - (II), (B) - (III), (C) - (IV), (D) - (I)
- (c) (A) - (I), (B) - (II), (C) - (IV), (D) - (III)
- (d) (A) - (III), (B) - (IV), (C) - (I), (D) - (II)

Correct Answer: (b) (A) - (II), (B) - (III), (C) - (IV), (D) - (I)

Solution: Black heart of Potato is caused by a deficiency of Boron, Interveinal chlorosis of younger leaves by Iron, Whip-tail in Cauliflower by Molybdenum, and Die-back of terminal buds by Calcium.

 Quick Tip

Identifying specific nutrient deficiencies can guide effective supplementation and management practices in crop cultivation.

59. The formula of gypsum is

- (a) CaCO_3
- (b) $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$
- (c) Ca(OH)_2
- (d) CaO

Correct Answer: (b) $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$

Solution: Gypsum is chemically known as calcium sulfate dihydrate, with the formula $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$.

 Quick Tip

Gypsum is used in agriculture to improve soil structure and as a source of calcium and sulfur for plant nutrition.

60. What was the name of "the Commission for Agricultural Costs and Prices (CACP)" prior to 1980?

- (a) Agricultural Prices Commission
- (b) Commission for Farming Prices and Costs
- (c) Farming Costs and Prices Commission
- (d) Support Price Commission

Correct Answer: (a) Agricultural Prices Commission

Solution: Before being renamed as the Commission for Agricultural Costs and Prices in 1980, it was known as the Agricultural Prices Commission.

💡 Quick Tip

The history of agricultural policy bodies provides insight into the evolving priorities and challenges of agricultural economics and policy-making.

61. Which of the following statements about correlation coefficient and regression coefficients are correct?

- (A) The correlation coefficient is unaffected by change of origin and scale
- (B) Regression coefficients are independent of change of origin but not of scale
- (C) Correlation coefficient is the geometric mean of two regression coefficients
- (D) If one regression coefficient is greater than 1, the other must also be greater than 1

Options:

- (a) (A), (B) and (D) only.
- (b) (A), (B) and (C) only.
- (c) (A), (B), (C) and (D)
- (d) (B), (C) and (D) only.

Correct Answer: (b) (A), (B) and (C) only.

Solution: The statements (A), (B), and (C) are correct. Statement (D) is incorrect because regression coefficients are not necessarily symmetric in their influence.

💡 Quick Tip

Correlation provides a measure of the strength and direction of a linear relationship between two variables, which is scale invariant.

62. Which of the following exchangeable sodium percentage is characteristic of alkaline soils?

- (a) greater than 15%
- (b) 10-15%
- (c) less than 5%
- (d) 5-10%

Correct Answer: (a) greater than 15%

Solution: Alkaline soils typically have an exchangeable sodium percentage (ESP) greater than 15%.

 Quick Tip

High ESP can lead to soil structure degradation, making it imperative to manage salinity and sodicity in agricultural lands.

63. Consider the following statements regarding chrysanthemum-

- (A) Corms are used for propagation
- (B) Y2K is a variety of chrysanthemum
- (C) De-suckering is the removal of new shoots that develop from the base of the plant
- (D) Chrysanthemum is a short-day plant for flower bud initiation

Options:

- (a) (A), (B) and (D) only.
- (b) (A), (B) and (C) only.
- (c) (A), (B), (C) and (D)
- (d) (B), (C) and (D) only.

Correct Answer: (d) (B), (C) and (D) only.

Solution: Chrysanthemums do not propagate via corms; they are propagated through cuttings or division. Statements (B), (C), and (D) are correct.

 Quick Tip

Understanding the specific propagation methods and growth requirements of different plants is crucial for effective horticulture.

64. The colour of beetroot is attributed to which of the following compound?

- (a) B-Cyanins and B-Xanthins
- (b) B-Carotene and xanthophylls
- (c) Anthocyanin
- (d) B-Cyanins and B-Carotene

Correct Answer: (a) B-Cyanins and B-Xanthins

Solution: The vibrant red-purple color of beetroot is primarily due to the presence of B-Cyanins and B-Xanthins.

 Quick Tip

The pigments in beetroot not only provide color but also have antioxidant properties beneficial for health.

65. Place the following jelly making steps in the correct order-

- (A) Add sugar, boil and remove any scum
- (B) Boiling with water and add citric acid
- (C) Cut the fruits into thin slices
- (D) Strain the fruit mixture and test for pectin

Options:

- (a) (A), (C), (B), (D)
- (b) (A), (B), (C), (D)
- (c) (B), (A), (D), (C)
- (d) (C), (B), (D), (A)

Correct Answer: (d) (C), (B), (D), (A)

Solution: The correct sequence for making jelly is to first cut the fruits, then boil with water and add citric acid, followed by straining and testing for pectin, and finally adding sugar to boil and remove any scum.

 Quick Tip

Proper sequence in food processing techniques like jelly making is essential for achieving the desired texture and flavor.

66. Match List-I with List-II

List-I (Plant)	List-II (Characteristic)
(A) Carrot	(1) Sporophytic self-incompatibility
(B) Radish	(2) Heteromorphic flower
(C) Brinjal	(3) Protoandry
(D) Papaya	(4) Dioecy

Options:

- (a) (A) - (I), (B) - (II), (C) - (III), (D) - (IV)
- (b) (A) - (III), (B) - (I), (C) - (II), (D) - (IV)
- (c) (A) - (I), (B) - (II), (C) - (IV), (D) - (III)
- (d) (A) - (III), (B) - (IV), (C) - (I), (D) - (II)

Correct Answer: (b) (A) - (III), (B) - (I), (C) - (II), (D) - (IV)

Solution: The correct associations are: Carrot with Protoandry, Radish with Sporophytic self-incompatibility, Brinjal with Heteromorphic flower, and Papaya with Dioecy.

 Quick Tip

Recognizing the reproductive strategies of crops can aid in understanding their breeding patterns and pollination mechanisms.

67. Amrapali is a cross of

- (a) Dashehari X Neelum
- (b) Neelum X Kesar
- (c) Neelum X Alphonso
- (d) Dashehari X Alphonso

Correct Answer: (a) Dashehari X Neelum

Solution: The mango variety Amrapali is a hybrid cross between Dashehari and Neelum.

 Quick Tip

Hybridization in fruit crops like mango can result in new varieties with improved traits such as flavor, size, and resistance to diseases.

68. Thermal efficiency of diesel engine is

- (a) 32-38%
- (b) 55-60%
- (c) 42-48%
- (d) 45-52%

Correct Answer: (a) 32-38%

Solution: The typical thermal efficiency of diesel engines ranges from 32% to 38%.

 Quick Tip

Understanding the efficiency of different engine types can guide decisions in machinery selection for various applications.

69. Which of the following statements about tillage are correct?

- (A) Tillage operation in which nearly 30% crop residues are left on the soil surface is called conventional tillage
- (B) An open trench left in between two adjacent strips of land after finishing ploughing is called dead furrow.
- (C) Jethro Tull was known as father of tillage
- (D) Conservation tillage has mitigation effect on climate change

Options:

- (a) (A), (B) and (D) only.
- (b) (A), (B) and (C) only
- (c) (A), (B), (C) and (D).
- (d) (B), (C) and (D) only

Correct Answer: (d) (B), (C) and (D) only.

Solution: Statement (A) is incorrect as conventional tillage usually involves turning over the soil completely, leaving little to no residue. Statements (B), (C), and (D) are correct.

 Quick Tip

Understanding different tillage practices helps in making informed decisions that can lead to sustainable farming and soil conservation.

70. Dropping of seeds in furrow lines in a continuous flow and covering them with soil is called as-

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

Correct Answer: (c) Drilling

Solution: Drilling is a method of seed planting where seeds are dropped into furrow lines in a continuous flow and then covered with soil, which helps in achieving uniform seed depth and spacing.

 Quick Tip

The drilling method of planting is efficient for large-scale farming, promoting even growth and facilitating mechanized farming.

71. Consider the following statements regarding pest management in rice and choose correct options-

- (A) ETL for rice earhead bug in milky stage is 109 bugs/hill.
- (B) Use of synthetic pyrethroids may cause resurgence of sucking pest in rice.
- (C) Tip drying and orange discoloration of rice leaves is a typical symptom of *Recilia dorsalis*.
- (D) Alternate wetting and drying is a good management technique for controlling B.P.H. in rice.

Choose the correct answer from the options given below:

- (a) (A), (B) and (D) only.
- (b) (A), (B) and (C) only.
- (c) (A), (B), (C) and (D).
- (d) (B), (C) and (D) only.

Correct Answer: (a) (A), (B) and (D) only

Solution: Using synthetic pyrethroids can lead to the resurgence of sucking pests, and alternate wetting and drying effectively controls B.P.H., making them part of effective integrated pest management strategies in rice.

 Quick Tip

Understanding pest life cycles and their interactions with environmental factors is crucial for effective pest management in crops like rice.

72. Hand picking and killing of insects in field is a-

- (a) Mechanical method.
- (b) Cultural method
- (c) Biological method.
- (d) Preventive method.

Correct Answer: (a) Mechanical method

Solution: Hand picking is a simple mechanical method of pest control where pests are physically removed from plants, reducing pest populations without chemical use.

 Quick Tip

Mechanical methods like hand picking are environmentally friendly and can be effective in managing pest levels on a small scale or in gardens.

73. National Bureau of Agricultural Insect Resources (NBAIR) is located at-

- (a) Chennai, Tamilnadu
- (b) New Delhi
- (c) Bengaluru, Karnataka
- (d) Karnal, Haryana

Correct Answer: (c) Bengaluru, Karnataka

Solution: NBAIR is located in Bengaluru, Karnataka, serving as a pivotal center for research in agricultural insect resources in India.

 Quick Tip

Being aware of such key institutions can enhance collaboration and access to specialized knowledge in agricultural practices and pest management.

74. Match List-I with List-II:

List-I (Term)	List-II (Coined by)
(A) Ecology	(1) Ernst Hackel
(B) Pheromone	(II) Raymond C. Bushland
(C) Integrated control	(III) Karlson and Luscher
(D) Pest management	(IV) V. Stern

Choose the correct answer from the options given below:

- (a) (A)-(1), (B) - (II), (C) - (III), (D) - (IV)
- (b) (A)-(1), (B) - (III), (C) - (IV), (D) - (II)
- (c) (A)(I), (B) (II), (C) - (IV), (D) - (III)
- (d) (A)(III), (B) (IV), (C) - (I), (D) - (II)

Correct Answer: (b) (A)-(1), (B) - (III), (C) - (IV), (D) - (II)

Solution: The correct matching pairs are A-1, B-III, C-IV, and D-II, reflecting the correct identification of each term with its originator in the field of ecological and pest management studies.

 Quick Tip

Understanding the history and origin of key scientific terms can provide deeper insights into their development and application in the field.

75. Select the correct sequence of organs in the alimentary canal of insects, starting from mouth-

- (A) Ileum
- (B) Oesophagus
- (C) Crop
- (D) Pharynx

Choose the correct answer from the options given below:

- (a) (D), (B), (C), (A).
- (b) (A), (B), (C), (D).
- (c) (B), (A), (D), (C)
- (d) (C), (B), (D), (A).

Correct Answer: (a) (D), (B), (C), (A).

Solution: The correct sequence from the mouth in insect alimentary canal is Pharynx, Oesophagus, Crop, and Ileum, describing the path food follows from intake to digestion.

💡 Quick Tip

Knowledge of insect anatomy is essential for studying their feeding habits and developing targeted pest control strategies.
