CUET PG Agri Business Management 28th March 2024 Shift 3 Solution

Time Allowed:3 Hours	**Maximum Marks:**300	**Total Questions:**75

General Instructions

Read the following instructions very carefully and strictly follow them:

1. This question paper comprises 75 questions. All questions are compulsory.
2. Each question carries 04 (four) marks.
3. For each correct response, the candidate will get 04 (four) marks.
4. For each incorrect response, 01 (one) mark will be deducted from the total score.
5. Un-answered/un-attempted responses will be given no marks.
6. To answer a question, the candidate needs to choose one option as the correct option.
7. However, after the process of Challenges of the Answer Key, in case there are multiple correct options or a change in the key, only those candidates who have attempted it correctly as per the revised Final Answer Key will be awarded marks.
8. In case a question is dropped due to some technical error, full marks shall be given to all the candidates irrespective of whether they have attempted it or not.

1. When E = evaporation, T = transpiration, B = water needs for building up of plant body, CU = consumptive use, ET = evapotranspiration, WR = water requirement, GW = ground water, and ER = effective rainfall, then the irrigation requirement (IR) of an individual crop at field head is given by the equation:

Options:

(1) IR = E + T + B + special needs

(2) IR = WR - (E + T - B) + special needs

(3) IR = WR + ER + GW - special needs

(4) IR = ER + WR - CU + ET

Correct Answer: (1) IR = E + T + B + special needs

Solution: The irrigation requirement (IR) is calculated by adding together evaporation (E), transpiration (T), the water needed for plant growth (B), and any additional water requirements. This formula ensures that all aspects of water usage are accounted for.

Quick Tip

Always consider both the direct and indirect water needs of a crop while calculating irrigation requirements.

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2. Species of wheat that has gone practically out of cultivation in India because of its low productivity and disease susceptibility is:

Options:

(1) Triticum aestivum

(2) Triticum durum

(3) Triticum dicoccum

(4) Triticum sphagrococcum

Correct Answer: (4) Triticum sphagrococcum

Solution: Triticum sphagrococcum has been replaced in Indian agriculture because of its lower yield and high vulnerability to diseases. As a result, the focus has shifted towards high-yielding and disease-resistant varieties.

Quick Tip

Familiarize yourself with wheat species and their characteristics for better crop management insights.

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3. In view of storage of the world's water resources, the share of groundwater in total water in the hydrosphere is:

Options:

(1) 1.92%

(2) 3.84%

(3) 2%

(4) 94.23%

Correct Answer: (2) 3.84%

Solution:

Groundwater makes up about 3.84 percent of the Earth's total water resources and is an essential source for agriculture, drinking water, and industrial purposes.

Quick Tip

Understanding water distribution helps in better water resource planning and conservation strategies.

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4. Match List-I with List-II and choose the correct answer:

List-I (Crops)	List-II (Varieties)
(A) Wheat	(I) HD 2932
(B) Rice	(II) Pusa Sugandh 5
(C) Barley	(III) DWR 28
(D) Pearl millet	(IV) Pusa Composite 383

Options:

(1) (A)-(I), (B)-(I), (C)-(I), (D)-(IV)

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

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

(4) (A)-(I), (B)-(IV), (C)-(I), (D)-(II)

Correct Answer: (2) (A)-(I), (B)-(II), (C)-(III), (D)-(IV)

Solution:

Let's analyze the varieties of each crop:

Wheat:

The variety "HD 2932" is a well-known wheat variety. It is recognized for its high yield potential and disease resistance, making it suitable for a variety of agro-climatic conditions.

Therefore, the correct match for wheat is (A)-(I).

Rice:

"Pusa Sugandh 5" is a popular rice variety, especially known for its aromatic grains and higher yield. It is one of the varieties developed by the Indian Agricultural Research Institute (IARI) for cultivation in different regions.

Hence, the correct match for rice is (B)-(II).

Barley:

"DWR 28" is a variety of barley developed for its good resistance to diseases like rust and high adaptability to diverse climates. It is widely used for both food and fodder purposes.

Therefore, the correct match for barley is (C)-(III).

Pearl millet:

"Pusa Composite 383" is a well-known variety of pearl millet, recognized for its high yield and tolerance to drought conditions, making it ideal for arid and semi-arid regions.

Hence, the correct match for pearl millet is (D)-(IV).

Thus, the correct answer is Option (2): (A)-(I), (B)-(II), (C)-(III), (D)-(IV).

Quick Tip

When matching crops with their varieties, it's essential to remember the key characteristics of each variety, such as yield potential, disease resistance, and climate adaptability. This helps in accurate identification of the corresponding varieties.

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5. The critical stage(s) for irrigation in wheat is/are:

(A) Crown Root Initiation

(B) Late tillering

(C) Late jointing

(D) Dough

Options:

(1) (A), (B), and (D) only

(2) (A), (B), and (C) only

(3) (B), (C), and (D)

(4) (A), (C), and (D)

Correct Answer: (3) (B), (C), and (D)

Solution: Wheat requires careful management of irrigation during its growth stages to ensure optimal yield. The critical stages for irrigation are as follows:

Crown Root Initiation (A): While this stage is important for the initial growth of roots, it is not the critical stage for irrigation. Irrigation can be beneficial but is not as crucial as other stages.

Late tillering (B): This stage is crucial for wheat as it ensures proper development of tillers, which are important for grain production. Irrigation at this stage supports the tillering process and enhances the plant's overall growth.

Late jointing (C): At this stage, the plant is preparing for the reproductive phase, and adequate irrigation helps in the proper development of the wheat plant. Water stress at this stage can lead to reduced yield.

Dough (D): This stage is also critical for wheat as it directly influences grain filling. Proper irrigation is necessary to avoid water stress during this phase, which can significantly affect the quality and quantity of the yield.

Based on this information, the critical stages for irrigation in wheat are (B), (C), and (D), making Option (3) the correct answer.

Quick Tip

To optimize irrigation in wheat cultivation, focus on the critical stages such as late tillering, late jointing, and dough. These stages are vital for proper root and shoot development, as well as grain formation. Managing water efficiently during these stages will help maximize yield.

Question 6.

Arrange the following millet crops in increasing order of acreage under each:

(A) Finger millet

(B) Pearl millet

(C) Little millet

(D) Kodo millet

Options:

(1) (A), (B), (C), (D)

(2) (C), (D), (A), (B)

(3) (B), (A), (D), (C)

(4) (D), (C), (A), (B)

Correct Answer: (2) (C), (D), (A), (B)

Solution:

To determine the increasing order of acreage under these millet crops, we need to look at the cultivation patterns in India:

- Little millet (C): Little millet has the smallest acreage of all the millets. It is primarily grown in regions with less favorable climatic conditions and on small-scale farms.
- Kodo millet (D): Kodo millet is cultivated in some regions but has a slightly higher acreage than little millet. It is grown in dry and arid areas, but its overall acreage remains limited.
- Finger millet (A): Finger millet (also known as Ragi) is more widely grown, especially in southern and eastern India, due to its higher yield and drought tolerance. It is grown on a larger scale than little millet and kodo millet.
- Pearl millet (B): Pearl millet (Bajra) is the most widely cultivated millet in India,

particularly in states like Rajasthan, Haryana, and Gujarat. It thrives in arid and semi-arid conditions and has the largest acreage of all the millets.

Thus, the correct increasing order of acreage is: (C) Little millet, (D) Kodo millet, (A) Finger millet, (B) Pearl millet. This corresponds to Option (2).

Quick Tip

Pearl millet has the largest acreage due to its widespread use in drought-prone regions. Finger millet follows next, with significant cultivation in southern and eastern India. Kodo millet and Little millet are more niche crops, with little millet having the smallest acreage, grown in areas with poor soil and water conditions.

Question 7.

The allelochemical allyl isothiocyanate is found in the plant:

Options:

(1) Sorghum

(2) Mustard

(3) Coffee

(4) Wheat

Correct Answer: (2) Mustard

Solution:

Allyl isothiocyanate is a type of allelochemical, which is a naturally occurring compound that can influence the growth of other plants. This compound is most famously found in the mustard plant (Brassica species). It is responsible for the characteristic pungent odor of mustard and certain other cruciferous vegetables. Allyl isothiocyanate plays a role in mustard's ability to inhibit the growth of competing plants, acting as a natural herbicide.

Here's a breakdown of the options:

- Sorghum (1): Sorghum contains other allelochemicals, but not allyl isothiocyanate. - Mustard (2): Mustard is the correct answer as it contains allyl isothiocyanate. - Coffee (3): Coffee contains different alkaloids like caffeine, but not allyl isothiocyanate. - Wheat (4): Wheat does not produce allyl isothiocyanate, but rather other compounds like phenolic acids.

Therefore, the correct answer is (2) Mustard.

Quick Tip

To identify plants containing allyl isothiocyanate, focus on mustard and other cruciferous vegetables like radishes and horseradish. These plants are known for producing pungent compounds that serve as natural herbicides or growth inhibitors for surrounding plants.

Question 8.

The phenomenon of one plant having a detrimental effect on another through the production and release of toxic chemicals is termed as:

Options:

(1) Synergism

(2) Symbiosis

(3) Allelopathy

(4) Mutualism

Correct Answer: (3) Allelopathy

Solution:

Allelopathy refers to the biological phenomenon in which one plant species produces and releases chemicals (allelochemicals) into the environment that have a harmful effect on the growth, development, or survival of neighboring plant species. These chemicals can be released through various parts of the plant, including the roots, leaves, or decaying plant material.

Here's a breakdown of the options:

- Synergism (1): This term refers to the interaction between two or more substances or organisms that produce a combined effect greater than the sum of their individual effects. It is not related to the detrimental effect between plants. - Symbiosis (2): Symbiosis is a relationship between two different organisms that live together in close proximity, often benefiting each other. It is not related to the harmful effects caused by chemical release. - Allelopathy (3): This is the correct answer. Allelopathy specifically refers to the detrimental

effects one plant may have on another through the release of toxic chemicals. - Mutualism (4): Mutualism is a type of symbiotic relationship where both organisms benefit from the association, which is the opposite of allelopathy.

Thus, the correct answer is (3) Allelopathy.

Quick Tip

To identify allelopathic plants, look for those that inhibit the growth of other plants nearby. Examples include black walnut trees, which release juglone, a chemical that negatively impacts other plant species, or sorghum, which can suppress the growth of other plants through allelopathic compounds.

Question 9.

The herbicide Metsulfuron methyl belongs to the group:

Options:

(1) Pyridinones

(2) Phenols

(3) Sulfonylureas

(4) Oxidiazoles

Correct Answer: (3) Sulfonylureas

Solution:

Metsulfuron methyl is a selective herbicide that is widely used for controlling broadleaf and some grass weeds in various crops. It works by inhibiting the activity of the enzyme acetolactate synthase (ALS), which is crucial for the biosynthesis of certain amino acids. Metsulfuron methyl belongs to the Sulfonylureas group of herbicides, which are known for their effectiveness at low doses and their ability to control a wide range of weeds.

Here's a breakdown of the options:

Pyridinones (1):This group of herbicides includes substances like clopyralid, which targets broadleaf weeds but is not related to Metsulfuron methyl. - Phenols (2): Phenolic herbicides, such as 2,4-D, are used for controlling broadleaf weeds but do not include Metsulfuron methyl. - Sulfonylureas (3): This is the correct answer. Metsulfuron methyl belongs to the

Sulfonylureas group, which includes other herbicides like chlorimuron ethyl and tribenuron methyl. - Oxidiazoles (4): This is not a group that Metsulfuron methyl belongs to, and Oxidiazoles are not commonly used in herbicides.

Therefore, the correct answer is (3) Sulfonylureas.

Quick Tip

To identify Sulfonylurea herbicides, look for those that inhibit acetolactate synthase (ALS), an enzyme involved in amino acid synthesis. This class of herbicides is known for its effectiveness in small doses and broad-spectrum control of weeds. Examples include Metsulfuron methyl and Chlorimuron ethyl.

Question 10.

Which of the statement(s) is/are correct?

(A) Urea herbicides inhibit photolysis in photosynthesis.

(B) Triazines inhibit the growth of emerging seedlings.

(C) Sulfonyl ureas first affect the meristematic tissues resulting into chlorosis and necrosis.

(D) Paraquat is a systemic herbicide.

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: (2) (A), (B), and (C) only

Solution:

Let's analyze each statement:

- (A) Urea herbicides inhibit photolysis in photosynthesis: This statement is correct. Urea herbicides, such as diuron and other similar compounds, inhibit photosynthesis by blocking the process of photolysis, which is crucial for the production of oxygen and energy in plants. This prevents plants from effectively using light energy, thus disrupting their growth.

- (B) Triazines inhibit the growth of emerging seedlings: This statement is correct. Triazine

herbicides, such as atrazine, work by inhibiting photosynthesis in the chloroplasts, thereby preventing the proper development of emerging seedlings. They affect the photosynthetic machinery, which hinders the plant's ability to produce food and grow.

- (C) Sulfonyl ureas first affect the meristematic tissues resulting in chlorosis and necrosis: This statement is also correct. Sulfonylurea herbicides, such as Metsulfuron methyl, inhibit the enzyme acetolactate synthase (ALS), leading to the disruption of amino acid synthesis. This initially affects the meristematic tissues (growth regions of the plant), causing chlorosis (yellowing) and necrosis (tissue death).

- (D) Paraquat is a systemic herbicide: This statement is incorrect. Paraquat is a contact herbicide, not systemic. It works by generating reactive oxygen species that damage plant cells upon contact, but it does not move through the plant systemically like some other herbicides (e.g., glyphosate).

Thus, the correct answer is (2) (A), (B), and (C) only.

Quick Tip

To identify the characteristics of herbicides, remember that systemic herbicides move through the plant to affect growth processes in various tissues, while contact herbicides like Paraquat only affect the areas they directly contact. Additionally, herbicides such as Sulfonylureas and Triazines work by targeting critical metabolic pathways like photosynthesis and amino acid synthesis.

Question 11.

Match List-I with List-II:

List-I (Group)	List-II (Herbicide)
(A) Phenoxyacetics	(I) 2,4-D
(B) Ureas	(II) Isoproturon
(C) Triazines	(III) Atrazine
(D) Arsenicals	(IV) MSMA

Options:

(1) (A)-(I), (B)-(I), (C)-(III), (D)-(IV)

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

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

(4) (A)-(I), (B)-(IV), (C)-(I), (D)-(II)

Correct Answer: (3) (A)-(I), (B)-(IV), (C)-(III), (D)-(II)

Solution:

The correct matches are: - Phenoxyacetics: 2,4-D (I), - Ureas: Isoproturon (IV), - Triazines: Atrazine (III), - Arsenicals: MSMA (II). This classification is based on the chemical composition and application of these herbicides.

Quick Tip

Learn the chemical groups and their associated herbicides for better understanding of weed management strategies.

Question 12.

Some herbicides control weeds by inhibiting photosynthesis. The sequence of reactions involved in the process is:

(A) Production of lipid radical and initiation of chain of lipid peroxidation

(B) Extraction of hydrogen from unsaturated lipids by triplet chlorophyll and singlet oxygen

(C) Oxidation of lipids and proteins

(D) Loss of chlorophyll and carotenoids

Options:

(1) (A), (A), (B), (B), (C), (D)

(2) (A), (B), (D), (C)

(3) (B), (A), (C), (D)

(4) (B), (C), (D), (A)

Correct Answer: (3) (B), (A), (C), (D)

Solution:

Photosynthesis-inhibiting herbicides lead to oxidative damage. The sequence involves: - (B) Extraction of hydrogen, - (A) Initiation of lipid peroxidation, - (C) Oxidation of lipids and proteins, - (D) Loss of chlorophyll and carotenoids. This disrupts plant metabolism and

growth.

Quick Tip

Understand the biochemical mechanisms behind herbicide actions to grasp their effects on plant physiology.

Question 13.

Which is not true about organic agriculture?

Options:

(1) Organic production system is managed in accordance to Organic Food Production Act of 1990

(2) Organic agriculture promotes and enhances biodiversity, biological cycles, and environmental stewardship

(3) Organic farmers are inspected by independent certifying agencies and must follow specific crop and livestock production guidelines

(4) Weed control and fertilization are not the challenges faced by organic crop producers

Correct Answer: (4) Weed control and fertilization are not the challenges faced by organic crop producers

Solution:

Weed control and fertilization are significant challenges in organic farming. Organic agriculture requires natural methods for weed and fertility management, making it labor-intensive. The other statements correctly describe organic farming.

Quick Tip

Focus on the principles and challenges of organic farming to differentiate it from conventional farming.

Question 14.

Allowed inputs for organic production are:

Options:

(1) Manure, compost, Elemental Sulfur, and Rock phosphate

(2) Bone meal, Blood meal, Soluble boron, and glyphosate

(3) Magnesium sulfate, manure, compost, and Chlorpyriphos

(4) Manure, compost, and Imidachloprid

Correct Answer: (1) Manure, compost, Elemental Sulfur, and Rock phosphate

Solution:

Inputs like manure, compost, Elemental Sulfur, and Rock phosphate are approved for organic farming. These natural substances enrich soil health and comply with organic standards. The other options include synthetic chemicals that are not permitted.

Quick Tip

Learn the list of approved inputs for organic farming to ensure compliance with organic certification standards.

Question 15.

Which statement is correct about organic agriculture?

Options:

(1) Diverse rotations and nonsynthetic insecticides are used for insect management

(2) Primarily synthetic herbicides and herbicide-resistant transgenic crops are used

(3) Greater inputs are used than conventional agriculture

(4) Primarily synthetic fertilizers are used

Correct Answer: (1) Diverse rotations and nonsynthetic insecticides are used for insect management

Solution:

Organic farming relies on diverse crop rotations and nonsynthetic methods, such as natural insecticides, for pest control. The use of synthetic chemicals is prohibited. Organic farming aims to enhance biodiversity and maintain ecological balance.

Quick Tip

Understand the practices and principles of organic farming to distinguish it from conventional practices.

Question 16.

Which of the following statements is/are correct about cropping systems?

(A) Inclusion of legumes in the cropping systems

(B) Intercropping is a cropping system in which two or more crops are grown together on the same field during a growing season

(C) Green manure crop is grown in the cropping system for the primary purpose of ploughing under to improve soil fertility

(D) Multiple cropping is the sequential production of two or more different crops from the same field each year

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: (3) (A), (B), (C), and (D)

Solution:

All the statements are correct as they describe various cropping systems, including legumes for soil enrichment, intercropping for maximizing resource use, green manure for soil fertility, and multiple cropping for increased productivity.

Quick Tip

Focus on the benefits and applications of different cropping systems to optimize agricultural practices.

Question 17.

Match List-I with List-II:

List-I (System)	List-II (Description)
(A) Agroforestry	(I) A type of system where trees or shrubs are grown for harvest alongside other crops
(B) Alley Cropping	(II) A type of agroforestry where trees are grown in rows with annual or perennial crops between them
(C) Strip cropping	(III) A polyculture strategy involving crops in adjacent strips harvested at different times
(D) Mixed cropping	(IV) A type of polyculture where two or more crops are grown together at random

Options:

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

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

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

(4) A-III, B-IV, C-II, D-II

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

Solution:

Agroforestry involves planting trees with crops for better yield and ecosystem balance. Alley cropping grows crops between tree rows. Strip cropping prevents erosion by alternating rows of crops, while mixed cropping grows multiple crops together randomly.

Quick Tip

Understanding different cropping systems can optimize land use and enhance sustainability.

Question 18.

Given below are the activities performed while cultivating a crop. Arrange them from first to last:

(A) Ploughing

(B) Thinning

(C) Seeding

(D) Harvesting

Options:

(1) (A), (B), (C), (D)

(2) (A), (C), (B), (D)

(3) (B), (A), (D), (C)

(4) (C), (B), (D), (A)

Correct Answer: (2) (A), (C), (B), (D)

Solution:

The correct sequence is: - Ploughing: Preparing the soil. - Seeding: Sowing seeds. - Thinning: Removing excess plants. - Harvesting: Collecting the mature crop.

Quick Tip

Remember the logical flow of cultivation: soil preparation, sowing, plant management, and harvesting.

Question 19.

Di-ammonium phosphate contains:

Options:

(1) Nitrogen (18%) and Phosphorus (46%)

(2) Nitrogen (46%) and Phosphorus (18%)

(3) Nitrogen (46%) only

(4) Phosphorus (46%) only

Correct Answer: (1) Nitrogen (18%) and Phosphorus (46%)

Solution:

Di-ammonium phosphate is a commonly used fertilizer containing 18% Nitrogen and 46%

Phosphorus. It is widely used for its balanced nutrient supply.

Quick Tip

Focus on the nutrient composition of commonly used fertilizers for better crop management practices.

Question 20.

In a market economy, resources are allocated by:

Options:

(1) Its demand

(2) A disaster

(3) Prices

(4) Demand and supply

Correct Answer: (4) Demand and supply

Solution:

In a market economy, resources are allocated based on the forces of demand and supply. Prices serve as signals for producers and consumers, ensuring an efficient distribution of resources.

Quick Tip

Understand the role of demand and supply in resource allocation to grasp basic economic principles.

Question 21.

If the marginal cost is greater than average cost, it means:

Options:

(1) Average total cost is increasing

(2) Average total cost is decreasing

(3) Average cost is constant

(4) Cannot be determined

Correct Answer: (1) Average total cost is increasing

Solution:

When marginal cost exceeds average cost, the average cost starts to rise because each additional unit adds more to the cost than the current average.

Quick Tip

Focus on the relationship between marginal cost and average cost to understand cost behaviors.

Question 22.

The production possibilities frontier shows:

Options:

(1) All combinations of two inputs that can produce a constant level of output

(2) All combinations of two outputs that can be produced with a constant level of inputs

(3) All levels of one output that can be produced with varying levels of inputs

(4) An isoquant

Correct Answer: (2) All combinations of two outputs that can be produced with a constant level of inputs

Solution:

The production possibilities frontier illustrates the trade-offs and maximum production combinations of two goods given a fixed set of resources.

Quick Tip

The PPF concept is fundamental to understanding opportunity costs and resource allocation in economics.

Question 23.

Match List-I with List-II:

List-I (Schemes/Events)	List-II (Year)
(A) Lead Bank Scheme	(IV) 1969
(B) All India Rural Credit Survey Committee	(I) 1954
(C) Regional Rural Banks	(II) 1975
(D) Service Area Approach	(III) 1989

Options:

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

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

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

(4) (A)-(II), (B)-(IV), (C)-(I), (D)-(II)

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

Solution:

The correct matches are: - Lead Bank Scheme: 1969, - All India Rural Credit Survey Committee: 1954, - Regional Rural Banks: 1975, - Service Area Approach: 1989. These schemes played pivotal roles in India's rural development and banking reforms.

Quick Tip

Familiarize yourself with the timeline and objectives of major rural development schemes for exams.

Question 24.

Borrowing funds by the farmers for paying tax to the government is known as:

Options:

(1) Unproductive loan

(2) Productive loan

(3) Consumption loan

(4) Purposive loan

Correct Answer: (1) Unproductive loan

Solution:

Borrowing funds for activities such as paying taxes, which do not generate income or

economic returns, is classified as an unproductive loan. These loans are often considered liabilities as they do not directly contribute to the borrower's productivity.

Quick Tip

Differentiate between productive and unproductive loans based on their impact on income generation.

Question 25.

Liberalization, Privatization, and Globalization (LPG) model of development was introduced by:

Options:

(1) Dr. P. Chidambaram

(2) Smt. Nirmala Sitharaman

(3) Dr. Manmohan Singh

(4) Dr. Yashwant Sinha

Correct Answer: (3) Dr. Manmohan Singh

Solution:

The LPG model was introduced in India in 1991 under the leadership of Dr. Manmohan Singh, then Finance Minister. It aimed to open the economy by reducing government intervention, promoting privatization, and encouraging globalization.

Quick Tip

Focus on key economic reforms and the personalities associated with them for a holistic understanding.

Question 26.

The third amendment in the Indian Patent Act was introduced during:

Options:

(1) 2004

(2) 2006

(3) 2008

(4) 2010

Correct Answer: (1) 2004

Solution:

The third amendment to the Indian Patent Act, introduced in 2004, aligned Indian patent laws with the Trade-Related Aspects of Intellectual Property Rights (TRIPS) agreement, strengthening intellectual property rights.

Quick Tip

Understand the key milestones in Indian patent law reforms and their global implications.

Question 27.

Consumers' ability to identify the brand under different conditions, as reflected by their brand recall performance, is known as:

Options:

(1) Brand audit

(2) Brand awareness

(3) Brand contact

(4) Brand community

Correct Answer: (2) Brand awareness

Solution:

Brand awareness refers to a consumer's ability to recognize or recall a brand under different conditions. It is a critical component of marketing strategies to build customer loyalty and trust.

Quick Tip

Focus on marketing terminologies like brand awareness, recall, and perception to excel in business-related exams.

Question 28.

Financial requirements of the farmers can be classified on the basis of time period:

(A) Short period

(B) Medium period

(C) Long period

(D) Very long period

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: (2) (A), (B), and (C) only

Solution:

Farmer financial requirements are classified based on duration: - Short-term: For seasonal activities like sowing and harvesting. - Medium-term: For farm machinery or storage. - Long-term: For land improvement or major infrastructure. Very long-term needs are rare in practical classifications.

Quick Tip

Understand the duration and purpose of financial needs in agriculture for better decision-making.

Question 29.

RBI set up a high-level committee on agricultural credit chaired by Mr. R.V. Gupta, and he recommended:

(A) Abolition of stamp duty on mortgage of agricultural land

(B) Modify service area approach

(C) Offer farmers a composite credit package

(D) Devise a liquid savings package

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: (3) (A), (B), (C), and (D)

Solution:

The R.V. Gupta committee recommended key changes in agricultural credit, such as abolishing stamp duty, modifying service area approaches, providing composite credit packages, and devising liquid savings schemes. These reforms were aimed at improving credit access and financial inclusion for farmers.

Quick Tip

Focus on the reforms introduced by key committees to enhance agricultural credit systems.

Question 30.

If the data is classified by attributes and two or more characters are to be compared within each attribute, the statistical tool used is:

Options:

(1) Component bar diagram

(2) Percentage bar diagram

(3) Pie diagram

(4) Multiple bar diagram

Correct Answer: (4) Multiple bar diagram

Solution:

A multiple bar diagram is used to compare two or more related quantities for each attribute. It helps visualize comparisons effectively by displaying grouped bars for each category.

Quick Tip

Use multiple bar diagrams for comparing multiple variables within the same dataset.

Question 31.

The deviation of individual values from their average is called:

Options:

(1) Quartile deviation

(2) Mean deviation

(3) Standard deviation

(4) Relative dispersion

Correct Answer: (2) Mean deviation

Solution:

Mean deviation measures the average absolute deviation of data points from the mean. It provides insights into the variability or dispersion of the dataset.

Quick Tip

Understand the differences between mean, quartile, and standard deviations for analyzing data variability.

Question 32.

Match List-I with List-II:

List-I (Programmes)	List-II (Year of Starting)
(A) Prime Minister Rozgar Yojana	(I) 1993
(B) Mahatma Gandhi National Rural Employment Guarantee Act	(II) 2006
(C) Swarnjayanti Gram Swarojgar Yojana	(III) 1999
(D) Integrated Watershed Development Programme	(IV) 1989

Options:

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

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

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

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

Correct Answer: (2) (A)-(I), (B)-(II), (C)-(III), (D)-(IV)

Solution:

The correct matches are: - Prime Minister Rozgar Yojana: 1993, - MGNREGA: 2006, - Swarnjayanti Gram Swarojgar Yojana: 1999, - Integrated Watershed Development Programme: 1989.

Quick Tip

Learn the timelines and objectives of major rural development programmes for exams.

Question 33.

A process aimed at improving the well-being and self-realization of people living outside urbanized areas through a collective process is known as:

Options:

(1) Social development

(2) Economic development

(3) Market development

(4) Rural development

Correct Answer: (4) Rural development

Solution:

Rural development focuses on improving the quality of life, economic conditions, and self-reliance of people in rural areas. It includes initiatives in health, education, and infrastructure development.

Quick Tip

Understand the scope and elements of rural development to differentiate it from other development models.

Question 34.

The Community Development Programme was launched by the Government of India on:

Options:

(1) 2 October 1952

(2) 2 October 1950

(3) 2 October 1954

(4) 2 October 1947

Correct Answer: (1) 2 October 1952

Solution:

The Community Development Programme, launched on 2 October 1952, marked the beginning of planned development initiatives aimed at improving the quality of life in rural areas.

Quick Tip

Focus on landmark dates in India's rural development history for factual accuracy in exams.

Question 35.

When too much of an input is used, and output decreases, the production process results in:

Options:

(1) Constant returns

(2) Increasing returns

(3) Decreasing returns

(4) Negative returns

Correct Answer: (4) Negative returns

Solution:

Negative returns occur when additional inputs reduce total output, typically due to overuse of resources or inefficiencies in the production process.

Quick Tip

Understand the stages of production and their impact on returns to manage resources effectively.

Question 36.

Arrange the following Rural Development Programmes in chronological order:

(A) Marthandam

(B) Gurgaon

(C) Sarvoday

(D) Etwah Pilot Project

Options:

(1) (A), (B), (C), (D)

(2) (A), (D), (B), (C)

(3) (B), (A), (D), (C)

(4) (C), (B), (D), (A)

Correct Answer: (3) (B), (A), (D), (C)

Solution:

The chronological order of rural development programmes is: - Gurgaon, - Marthandam, - Etwah Pilot Project, - Sarvoday.

Quick Tip

Learn the sequence of development programmes to understand their evolution and impact.

Question 37.

A measure of revenue and expenses during a specified accounting period is known as:

Options:

(1) Balance sheet

(2) Income statement

(3) Net worth statement

(4) Economic loss statement

Correct Answer: (2) Income statement

Solution:

An income statement provides a summary of revenues and expenses over a specific period, giving insights into a business's financial performance. It helps evaluate profitability and efficiency.

Quick Tip

Understand the distinction between financial statements like balance sheets, income statements, and cash flow statements.

Question 38.

India's share in the total world's buffalo population is:

Options:

(1) 20%

(2) 53%

(3) 60%

(4) 70%

Correct Answer: (2) 53%

Solution:

India accounts for 53% of the world's buffalo population, highlighting its significant role in global livestock production and dairy industries.

Quick Tip

Focus on India's contribution to global livestock statistics for agricultural and economic studies.

Question 39.

The equation $S = (cl, b, r, p, t...)$ was first formulated by:

Options:

(1) Dokuchaiev

(2) Jenny

(3) Hilgard

(4) Whitney

Correct Answer: (2) Jenny

Solution:

Hans Jenny formulated the equation $S = (cl, b, r, p, t...)$, which represents soil formation as a function of climate (cl), organisms (b), relief (r), parent material (p), and time (t).

Quick Tip

Remember the factors influencing soil formation, as described by Jenny's equation.

Question 40.

Which one of the following minerals is a boron mineral in soils?

Options:

(1) Pyrolusite

(2) Colemanite

(3) Haematite

(4) Apatite

Correct Answer: (2) Colemanite

Solution:

Colemanite is a boron-containing mineral commonly found in soils. It plays an essential role in plant nutrition by providing boron, a crucial micronutrient.

Quick Tip

Learn the key minerals contributing to essential soil nutrients for agricultural practices.

Question 41.

Which of the following statement(s) is/are correct with reference to bulk density?

(A) Bulk density of soil depends on texture, structure, and organic matter.

(B) Bulk density decreases with the addition of organic matter to the soil.

(C) Fine-textured soils have more bulk density than coarse-textured soils.

(D) Compaction of soil increases the bulk density.

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: (1) (A), (B), and (D) only

Solution:

Bulk density depends on soil texture, structure, and organic matter. Adding organic matter reduces bulk density, while compaction increases it. However, fine-textured soils usually have less bulk density than coarse-textured soils.

Quick Tip

Understand how factors like organic matter and soil texture influence bulk density for soil management.

Question 42.

Match List-I with List-II:

List-I (Soil Forming Process)	List-II (Description)
(A) Laterization	(II) Accumulation of Sesquioxides
(B) Podsolization	(IV) Eluviation of Sesquioxides
(C) Pedoturbation	(I) Mixing of Soil
(D) Gleization	(III) Hydromorphic

Options:

(1) (A)-(I), (B)-(III), (C)-(I), (D)-(IV)

(2) (A)-(I), (B)-(II), (C)-(I), (D)-(IV)

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

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

Correct Answer: (3) (A)-(II), (B)-(IV), (C)-(I), (D)-(III)

Solution:

The correct matches are: - Laterization: Accumulation of sesquioxides, - Podsolization: Eluviation of sesquioxides, - Pedoturbation: Mixing of soil, - Gleization: Hydromorphic processes.

Quick Tip

Understand key soil-forming processes and their effects on soil properties.

Question 43.

A soil, which has pH more than 8.5, ESP more than 15, and EC less than 4 ds/m is called:

Options:

(1) Saline Soil

(2) Alkali Soil

(3) Saline-Alkali Soil

(4) Degraded Alkali Soil

Correct Answer: (2) Alkali Soil

Solution:

Alkali soils have high pH (greater than 8.5), high exchangeable sodium percentage (ESP), and low electrical conductivity (EC). These soils are less productive due to poor structure and water infiltration.

Quick Tip

Understand the classification of soil types based on pH, ESP, and EC to determine their agricultural suitability.

Question 44.

Which one of the following is NOT considered as a chemical weathering process?

Options:

(1) Hydrolysis

(2) Carbonation

(3) Reduction

(4) Calcification

Correct Answer: (4) Calcification

Solution:

Calcification is a soil-forming process involving calcium accumulation, not a chemical weathering process. Chemical weathering processes include hydrolysis, carbonation, and reduction.

Quick Tip

Distinguish between chemical weathering processes and soil-forming processes for clarity in geoscience concepts.

Question 45.

Arrange the sequence in terms of the increasing order of soil loss from the field due to water erosion:

(A) Gully erosion

(B) Rill erosion

(C) Splash erosion

(D) Sheet erosion

Options:

(1) (A), (B), (C), (D)

(2) (A), (C), (B), (D)

(3) (B), (A), (D), (C)

(4) (C), (D), (B), (A)

Correct Answer: (4) (C), (D), (B), (A)

Solution:

The correct order is: - Splash erosion (least soil loss), - Sheet erosion, - Rill erosion, - Gully erosion (most severe). These processes represent increasing severity of soil displacement by water.

Quick Tip

Remember the erosion types in terms of intensity and soil displacement for better land management understanding.

Question 46.

The size range of soil particles in saltation type of wind erosion is:

Options:

(1) 0.5-1.0 mm

(2) 1.0-2.0 mm

(3) 0.05-0.5 mm

(4) 0.002-0.05 mm

Correct Answer: (3) 0.05-0.5 mm

Solution:

Saltation involves soil particles in the size range of 0.05-0.5 mm being lifted and transported by wind in short hops. It is the most common form of wind erosion.

Quick Tip

Understand the different forms of wind erosion and their particle size ranges for efficient soil conservation strategies.

Question 47.

Match List-I with List-II:

List-I	List-II
(A) Chepil and Milne (1941)	(IV) Mechanics of soil movement by wind
(B) Surface creep	(III) Coarse soil particles
(C) Vegetative residue	(I) Protection of soil surface from wind action
(D) Strip cropping	(II) Alternate arrangement of erosion susceptibility and erosion-resistan

Options:

(1) (A)-(I), (B)-(I), (C)-(III), (D)-(IV)

(2) (A)-(I), (B)-(III), (C)-(I), (D)-(IV)

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

(4) (A)-(I), (B)-(IV), (C)-(I), (D)-(III)

Correct Answer: (3) (A)-(IV), (B)-(III), (C)-(I), (D)-(II)

Solution:

The classification reflects contributions to soil conservation and wind erosion mechanics: - Chepil and Milne studied wind erosion mechanisms. - Surface creep involves coarse particles rolling. - Vegetative residue prevents wind erosion. - Strip cropping uses crops with alternating erosion susceptibilities.

Quick Tip

Link processes with their outcomes to remember soil conservation strategies.

Question 48.

In the Universal Soil Loss Equation $A = RKLSCP$, K denotes:

Options:

(1) Soil conservation practices

(2) Soil roughness

(3) Soil erodibility

(4) Rainfall factor

Correct Answer: (3) Soil erodibility

Solution:

In the Universal Soil Loss Equation: - K represents soil erodibility, indicating the

susceptibility of soil particles to detachment and transport by rainfall and runoff.

Quick Tip

Learn the components of the Universal Soil Loss Equation for effective soil conservation.

Question 49.

The practice of conducting all field operations, such as ploughing, planting, and cultivating land across the slope, is called:

Options:

(1) Contour Farming

(2) Strip Cropping

(3) Terrace Farming

(4) Intercropping

Correct Answer: (1) Contour Farming

Solution:

Contour farming involves aligning field operations with the natural contours of the land to reduce soil erosion and improve water retention.

Quick Tip

Focus on sustainable farming practices to enhance soil and water conservation.

Question 50.

Match List-I with List-II:

List-I (Plant Diseases/Famine)	List-II (Year)
(A) Irish Famine	(III) 1845
(B) Bengal Famine	(I) 1943
(C) Coffee Rust	(II) 1870
(D) Downy Mildew of Tobacco	(IV) 1950

Options:

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

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

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

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

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

Solution:

The correct matches are: - Irish Famine (1845), - Bengal Famine (1943), - Coffee Rust (1870), - Downy Mildew of Tobacco (1950).

Quick Tip

Understand the timeline and impacts of major agricultural disasters for historical and scientific clarity.

Question 51.

Bordeaux mixture is a mixture of:

Options:

(1) Copper sulphate and hydrated lime

(2) Copper sulphate and slaked lime

(3) Calcium sulphate and hydrated lime

(4) Calcium sulphate and slaked lime

Correct Answer: (2) Copper sulphate and slaked lime

Solution:

Bordeaux mixture is made by mixing copper sulphate and slaked lime. It is widely used as a fungicide in agriculture.

Quick Tip

Familiarize yourself with common fungicides and their applications for pest control.

Question 52.

Who reported that fire blight of pear was caused by a bacterium?

Options:

(1) Prevost

(2) E.J. Butler

(3) T.J. Burrill

(4) E.F. Smith

Correct Answer: (3) T.J. Burrill

Solution:

T.J. Burrill was the first to report that fire blight of pear is caused by a bacterium. This discovery marked a significant milestone in plant pathology, shifting the understanding of bacterial diseases in plants.

Quick Tip

Remember the contributions of prominent scientists to the field of plant pathology for historical context.

Question 53.

Arrange the sequence of spore production in *Puccinia*:

(A) Urediospores

(B) Aeciospores

(C) Basidiospores

(D) Teleutospore

Options:

(1) (A), (B), (C), (D)

(2) (A), (C), (B), (D)

(3) (B), (A), (D), (C)

(4) (C), (A), (B), (D)

Correct Answer: (3) (B), (A), (D), (C)

Solution:

The correct sequence of spore production in *Puccinia* is: - Aeciospores (B), - Urediospores (A), - Teleutospores (D), - Basidiospores (C). This cycle represents the complex life cycle of rust fungi.

Quick Tip

Study the life cycle stages of plant pathogens to understand their propagation and control.

Question 54.

Viroids were discovered by:

Options:

(1) Diener

(2) Prusiner

(3) Doi

(4) Kassanis

Correct Answer: (1) Diener

Solution:

Viroids were discovered by T.O. Diener. They are the smallest infectious pathogens, consisting solely of a short strand of circular RNA without a protein coat.

Quick Tip

Focus on the discovery and unique characteristics of viroids to differentiate them from viruses.

Question 55.

Ratoon stunting disease of sugarcane is caused by:

Options:

(1) Virus

(2) Fungi

(3) Bacteria

(4) Nematodes

Correct Answer: (3) Bacteria

Solution:

Ratoon stunting disease of sugarcane is caused by a bacterium, *Leifsonia xyli subsp. xyli*. It leads to stunted growth and reduced yield in sugarcane crops.

Quick Tip

Understand the causes of major crop diseases and their management practices to enhance agricultural productivity.

Question 56.

Arrange the correct sequence of events in a disease cycle:

(A) Colonization

(B) Infection

(C) Inoculation

(D) Penetration

Options:

(1) (A), (B), (C), (D)

(2) (D), (B), (C), (A)

(3) (B), (A), (D), (C)

(4) (C), (D), (B), (A)

Correct Answer: (4) (C), (D), (B), (A)

Solution:

The correct sequence of events in a disease cycle is: Inoculation (C), Penetration (D), Infection (B), and Colonization (A). This order reflects the pathogen's interaction with the host.

Quick Tip

Understand the stages of a disease cycle to manage plant diseases effectively.

Question 57.

Match List-I with List-II:

List-I (Cattle Breeds)	List-II (Crossing Breeds)
(A) Karan Swiss	(II) Brown Swiss with Red Sindhi
(B) Karan Fries	(III) Brown Swiss with Sahiwal
(C) Frieswal	(IV) Holstein-Friesian with Sahiwal
(D) Sunandini	(I) Holstein-Friesian with Tharparkar

Options:

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

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

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

(4) (A)-(III), (B)-(IV), (C)-(IV), (D)-(I)

Correct Answer: (3) (A)-(III), (B)-(IV), (C)-(I), (D)-(II)

Solution:

The correct matches are: - Karan Swiss: Brown Swiss with Red Sindhi, - Karan Fries: Holstein-Friesian with Sahiwal, - Frieswal: Holstein-Friesian with Tharparkar, - Sunandini: Brown Swiss with Sahiwal.

Quick Tip

Link breeds with their crosses to understand the development of high-yielding cattle.

Question 58.

In open-pollinated variety of maize, how much minimum isolation distance is required to produce foundation seed?

Options:

(1) 400m

(2) 200m

(3) 100m

(4) 1000m

Correct Answer: (1) 400m

Solution:

A minimum isolation distance of 400m is required to produce foundation seeds in open-pollinated maize varieties to avoid genetic contamination.

Quick Tip

Understand isolation distance requirements to maintain genetic purity in seed production.

Question 59.

Which of the following statements is TRUE about T cytoplasm?

Options:

(1) It is a source of male sterility in soybeans.

(2) It is the primary male sterile cytoplasm in sunflower.

(3) It induces male sterility in maize.

(4) It causes self-incompatibility in maize.

Correct Answer: (3) It induces male sterility in maize.

Solution:

T cytoplasm is used in maize breeding programs for hybrid production due to its property of inducing male sterility.

Quick Tip

Focus on cytoplasmic male sterility systems for efficient hybrid seed production.

Question 60.

What was the title of the paper written by Gregor Johann Mendel and published in 1866?

Options:

(1) Experiments on Plant Hybridization

(2) Hybridization in Pea

(3) Hybridization Experiments on Pea

(4) Experiments on Pea Hybridization

Correct Answer: (1) Experiments on Plant Hybridization

Solution:

Mendel's groundbreaking work titled "Experiments on Plant Hybridization" laid the foundation of modern genetics by explaining inheritance patterns.

Quick Tip

Understand the significance of Mendel's contributions to genetics for foundational biology knowledge.

Question 61.

Match List-I with List-II:

List-I (Term)	List-II (Coined by)
(A) Mutation	(III) Hugo de Vries
(B) Gene	(IV) Wilhelm Johannsen
(C) Chromosome	(I) W. Waldeyer
(D) Polygenes	(II) K. Mather

Options:

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

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

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

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

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

Solution:

The terms are linked as follows: - Mutation: Hugo de Vries, - Gene: Wilhelm Johannsen, - Chromosome: W. Waldeyer, - Polygenes: K. Mather.

Quick Tip

Learn the origins of key genetic terms to strengthen understanding of genetics.

Question 62.

Arrange the following sub-stages of prophase I in meiotic cell division in the correct sequence:

(A) Zygotene

(B) Leptotene

(C) Diplotene

(D) Pachytene

Options:

(1) (A), (B), (C), (D)

(2) (A), (B), (D), (C)

(3) (B), (A), (D), (C)

(4) (C), (B), (D), (A)

Correct Answer: (3) (B), (A), (D), (C)

Solution:

The correct sequence of prophase I sub-stages is: Leptotene (B), Zygotene (A), Pachytene (D), Diplotene (C). Each stage has distinct chromosomal events.

Quick Tip

Understand meiotic stages and their role in genetic variation and gamete formation.

Question 63.

Which of the following statements are correct?

(A) In F1 generation, when the offspring is intermediate of both parents, it is called co-dominance.

(B) Polytene chromosomes are formed by the repeated replication of chromosomal DNA without subsequent nuclear division.

(C) Mutation is the ultimate source of variation in the population.

(D) Gregor Mendel investigated characters in the garden pea plant that were manifested as two opposing traits.

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: (3) (A), (B), (C), and (D)

Solution:

All statements are correct: - Co-dominance refers to intermediate offspring traits. - Polytene chromosomes form by repeated DNA replication. - Mutation is a primary variation source. - Mendel studied traits with binary opposition.

Quick Tip

Focus on key genetic principles and phenomena for a comprehensive understanding.

Question 64.

Which of the following substances can be used to break the dormancy of buds?

(A) Phenolic acid

(B) Para - ascorbic acid

(C) Gibberellic acid

(D) Abscisic acid

Options:

(1) Phenolic acid

(2) Para - ascorbic acid

(3) Gibberellic acid

(4) Abscisic acid

Correct Answer: (3) Gibberellic acid

Solution:

Gibberellic acid is a plant hormone known to promote growth and break the dormancy of seeds and buds. It stimulates enzyme production and cellular division to aid in plant development.

Quick Tip

Gibberellic acid is widely used in agriculture to promote growth and overcome dormancy in plants.

Question 65.

What is a shared characteristic between vegetative reproduction and apomixis?

(A) Both produce progeny identical to the parent

(B) Both produce parthenogenetic seeds

(C) Both are applicable only to dicot plants

(D) Vegetative reproduction can fix heterosis, not apomixis

Options:

(1) Both produce progeny identical to the parent

(2) Both produce parthenogenetic seeds

(3) Both are applicable only to dicot plants

(4) Vegetative reproduction can fix heterosis, not apomixis

Correct Answer: (1) Both produce progeny identical to the parent

Solution:

Vegetative reproduction and apomixis both result in offspring that are genetically identical to the parent because there is no recombination of genetic material involved in these processes.

Quick Tip

Understanding these modes of reproduction helps in identifying their applications in agriculture and horticulture.

Question 66.

Which of the following statements are correct with regard to the position of emergence of flower buds in different fruits?

(A) In mango, fruit buds are borne terminally and unfold to produce inflorescence without leaves.

(B) In apple, fruit buds are borne both terminally and laterally but unfold to produce inflorescence terminally.

(C) In pears, fruit buds are borne terminally unfolding to produce leafy shoots terminating into flower clusters.

(D) In jackfruit, fruit buds are always borne adventitiously in the old trunk or shoots.

Options:

(1) (A), (B), and (D) only

(2) (A), (B), and (C) only

(3) (A), (C), and (D) only

(4) (B), (C), and (D) only

Correct Answer: (3) (A), (C), and (D) only

Solution:

The correct combination reflects the characteristics of flower bud emergence in these fruits. Mango buds are terminal, apple buds are terminal and lateral, and jackfruit buds emerge adventitiously.

Quick Tip

Pay attention to the morphology of flower bud emergence for better understanding of fruit-bearing plants.

Question 67.

Which of the following systems follows a vertical row planting pattern system of layout?

(A) Rectangular system

(B) Hexagonal system

(C) Quincunx system

(D) Triangular system

Options:

(1) Rectangular system

(2) Hexagonal system

(3) Quincunx system

(4) Triangular system

Correct Answer: (1) Rectangular system

Solution:

The rectangular system of planting involves rows and columns arranged in a vertical and horizontal manner. This layout allows for ease of movement and uniform spacing.

Quick Tip

Rectangular planting is commonly used in agriculture for efficient use of space and machinery.

Question 68.

Consider the following statements/characteristics about the Gir breed of cattle and choose the correct one:

(A) The breed originated in the regions of Karachi and Hyderabad (Pakistan) during undivided India.

(B) The breed is characterized by uniquely curved horns, imparting a distinct 'half-moon' appearance.

(C) This breed is renowned for its hardiness and resistance to diseases.

(D) The milk production of the Gir breed typically ranges from 1200 to 1800 kgs per lactation.

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: (4) (B), (C), and (D) only

Solution:

The Gir breed is known for its unique half-moon shaped horns, disease resistance, and a high milk yield of 1200-1800 kg per lactation. Its origin during undivided India is a historical context.

Quick Tip

Recognizing cattle breeds and their characteristics is essential in animal husbandry practices.

Question 69.

Climacteric fruits are:

(A) Banana and Mango

(B) Banana and Grapes

(C) Grapes and Mango

(D) Citrus and Peach

Options:

(1) Banana and Mango

(2) Banana and Grapes

(3) Grapes and Mango

(4) Citrus and Peach

Correct Answer: (1) Banana and Mango

Solution:

Climacteric fruits such as bananas and mangoes undergo a significant increase in respiration and ethylene production during ripening, which leads to changes in texture and flavor.

Quick Tip

Climacteric fruits ripen even after being harvested, unlike non-climacteric fruits.

Question 70.

Match List-I with List-II:

List-I (Elements)	**List-II (Functions in Plants)**
(A) Iron	(I) Chlorophyll biosynthesis
(B) Zinc	(II) Indole Acetic Acid biosynthesis

(C) Manganese (III) Photolysis of water

(D) Boron (IV) Translocation of sugars

Options:

(1) (A)-(I), (B)-(III), (C)-(I), (D)-(IV)

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

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

(4) (A)-(I), (B)-(IV), (C)-(I), (D)-(II)

Correct Answer: (2) (A)-(I), (B)-(II), (C)-(III), (D)-(IV)

Solution:

The correct matches are:

(A) Iron - Chlorophyll biosynthesis

(B) Zinc - Indole Acetic Acid biosynthesis

(C) Manganese - Photolysis of water

(D) Boron - Translocation of sugars

Quick Tip

Remember the specific roles of micronutrients in plant physiological processes for better understanding of their importance in plant health.

Question 71.

Arrange the following electron carriers in the correct sequence of electron flow during photosynthesis in the thylakoid membrane:

(A) Cytochrome b6-f complex

(B) Plastoquinone

(C) PS I

(D) Plastocyanin

Options:

(1) (A), (B), (C), (D)

(2) (A), (C), (B), (D)

(3) (B), (A), (D), (C)

(4) (C), (B), (D), (A)

Correct Answer: (3) (B), (A), (D), (C)

Solution:

The correct sequence of electron carriers is:

Plastoquinone (B) $\rightarrow$ Cytochrome b6-f complex (A) $\rightarrow$ Plastocyanin (D) $\rightarrow$ Photosystem I (C).

Quick Tip

Understanding the flow of electrons in the light reaction of photosynthesis is crucial for grasping how plants generate ATP and NADPH.

Question 72.

Consider the following statements about agrisilviculture and choose the correct statements:

(A) It is a land management system where plantation of tree crops and agriculture are practiced simultaneously on the same plot of land.

(B) It can be used to produce both wood and agricultural crops.

(C) It is a sustainable land-use system that can improve soil health and reduce erosion.

(D) It is a three-dimensional production system designed for the concurrent production of agricultural crops, forest crops, and fodder for rearing of domesticated animals on the same plot of land.

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: (2) (A), (B), and (C) only

Solution:

The correct statements are (A), (B), and (C) because agrisilviculture focuses on combining tree crops with agriculture to improve sustainability and soil health. However, it doesn't always integrate fodder production for animals.

Quick Tip

Agrisilviculture is a crucial component of agroforestry that promotes biodiversity and sustainable land use.

Question 73.

Match List-I with List-II:

List-I (Pigments)	**List-II (Associated with)**
(A) Phytochrome	(I) Stimulation of flowering
(B) Leghaemoglobin	(II) Nitrogen fixation
(C) Chlorophyll a	(III) All photosynthesizing plants except bacteria
(D) Chlorophyll d	(IV) Red algae

Options:

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

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

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

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

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

Solution:

The correct matches are:

(A) Phytochrome - Stimulation of flowering

(B) Leghaemoglobin - Nitrogen fixation

(C) Chlorophyll a - All photosynthesizing plants except bacteria

(D) Chlorophyll d - Red algae

Quick Tip

Pigment functionality in plants is vital for processes like photosynthesis and nitrogen fixation.

Question 74.

Arrange the following steps involved in Hatch and Slack cycle in correct sequence:

(A) Carboxylation of Phosphoenol Pyruvate

(B) Splitting of Malate

(C) Breakdown of Oxaloacetate

(D) Phosphorylation of Pyruvate

Options:

(1) (A), (C), (B), (D)

(2) (A), (B), (C), (D)

(3) (B), (A), (D), (C)

(4) (C), (B), (D), (A)

Correct Answer: (1) (A), (C), (B), (D)

Solution:

The correct sequence is:

Carboxylation of Phosphoenol Pyruvate (A) $\rightarrow$ Breakdown of Oxaloacetate (C) $\rightarrow$ Splitting of Malate (B) $\rightarrow$ Phosphorylation of Pyruvate (D).

Quick Tip

Understanding the Hatch and Slack pathway aids in learning about C4 photosynthesis in plants.

Question 75.

Which nutrient element is involved in energy transformation in metabolic processes?

(A) Molybdenum

(B) Zinc

(C) Sulphate

(D) Phosphorus

Options:

(1) Molybdenum

(2) Zinc

(3) Sulphate

(4) Phosphorus

Correct Answer: (4) Phosphorus

Solution:

Phosphorus is a critical nutrient for energy transformation in plants as it is a component of ATP, the energy currency of cells.

Quick Tip

Phosphorus plays a pivotal role in the energy cycle and the synthesis of nucleic acids.
