

UPSSSC AGTA Agriculture & GK Answer Key Paper

Q1. White bud of maize and khaira disease of rice is due to deficiency of:

- (a) Manganese (Mn)
- (b) Zinc (Zn)
- (c) Copper (Cu)
- (d) Iron (Fe)
- (e) None of the above

S1. Ans. (b)

Sol.

- **Zinc (Zn) deficiency** is responsible for **white bud of maize** and **khaira disease of rice**.
- In maize, zinc deficiency produces characteristic **white or pale bands/stripes on young leaves**, particularly around the midrib, giving rise to the term **white bud**.
- In rice, zinc deficiency is commonly known as **khaira disease**, especially in zinc-deficient soils.
- Khaira disease is characterized by **bronzing, brownish spots, chlorosis, stunted growth, and poor tillering**.
- Zinc is essential for several enzymatic reactions, protein synthesis, growth regulation, and normal development of plants.
- Zinc deficiency is particularly important in **rice grown under flooded conditions**, where zinc availability can become reduced.

Information Booster:

- **Nutrient:** Zinc (Zn).
- **Rice disorder:** Khaira disease.
- **Maize disorder:** White bud.
- Zinc deficiency is generally more pronounced in **young tissues** because zinc has relatively limited mobility within plants.
- Zinc sulphate is a commonly used fertilizer for correcting zinc deficiency.

Why Other Options are Incorrect:

- (a) **Manganese (Mn)**



ALL EXAMS, **ONE** SUBSCRIPTION



Test. Analyze. Improve. Repeat.



*Don't just
prepare.
Perform.*

Test Prime – built only
for mock tests.



1,50,000+
Mock Tests



25,000+
Previous Year
Papers



800+
Exam
Covered



500%
Refund on
Selection



5 lakh+
Free Quizzes



Daily
Free PDFs



Top Alerts
Stay Updated

WHY TEST PRIME?

- ✓ Multilingual
- ✓ Detailed Solution
- ✓ Strong and Weak Areas
- ✓ All India Rankings



Safe & Reliable



Trusted by
Lakhs of Aspirants



Your Success,
Our Mission



**DOWNLOAD
TEST PRIME**

Your Success Partner!



Test

Prime



SUCCESS GALLERY!

MEET THE ACHIEVERS



Shreya, SBI PO



Sahil, SBI PO



Srijita, SBI PO



Vikram, IBPS PO



Neeti, IBPS PO



Arya, IBPS PO



Hasan, SSC CGL



Palak, SSC CGL



Priti, UP TGT



Aniket, Bihar Stet



Shaurya, NTPC



Sarita, CTET



Gourav, NTPC



Sanni, NTPC



Abhishek, CTET



Sapna, IBPS Clerk

THEY DID IT. YOU CAN TOO

READ THEIR STORIES!



- Manganese deficiency causes interveinal chlorosis and affects photosynthetic activity but is not the characteristic cause of khaira disease.

(c) Copper (Cu)

- Copper deficiency can cause dieback, chlorosis, and reproductive abnormalities but does not cause the characteristic khaira disease of rice.

(d) Iron (Fe)

- Iron deficiency mainly produces **interveinal chlorosis of young leaves** and is not responsible for khaira disease.

(e) None of the above

- Incorrect because **zinc deficiency** correctly explains both disorders.

Q2. African tall is a variety of:

- (a) Fodder bajra
- (b) Napier grass
- (c) Fodder sorghum
- (d) Fodder maize
- (e) None of the above

S2. Ans. (d)

Sol.

- **African Tall is a variety/composite of fodder maize** and therefore **option (d)** is correct.
- Tamil Nadu Agricultural University identifies **African Tall** as a fodder maize variety and reports it as a **composite variety**.
- It is grown primarily for **green fodder production** and can also be used for preparation of silage.
- African Tall is a tall-growing maize type with substantial biomass production, making it suitable for livestock feeding.
- TNAU reports African Tall with a plant height of approximately **302 cm**, demonstrating its tall-growing nature.
- It is generally harvested around the **milky stage of the cob** for good fodder quality.

Information Booster:

- **Crop:** Fodder maize.
- **Variety:** African Tall.

- **Botanical name of maize:** *Zea mays*.
- It is a **composite variety**.
- It is suitable for **green fodder and silage production**.

Why Other Options are Incorrect:

(a) Fodder bajra

- African Tall is not a fodder pearl millet variety.

(b) Napier grass

- Napier is a perennial fodder grass, while African Tall belongs to **maize**.

(c) Fodder sorghum

- Fodder sorghum includes varieties such as COFS types; African Tall is specifically associated with fodder maize.

(e) None of the above

- Incorrect because African Tall is a recognized **fodder maize** variety.

Q3. Total number of permanent teeth present in cattle is:

- (a) 32
- (b) 36
- (c) 30
- (d) 34
- (e) None of the above

S3. Ans. (a)

Sol.

- Adult cattle normally possess **32 permanent teeth**, making **option (a)** correct.
- Cattle are **ruminants** and have a characteristic dental arrangement adapted for grazing.
- They have **no upper incisors**; instead, the upper front jaw has a **dental pad** against which the lower incisors cut grass.
- There are **8 permanent incisors**, all located in the lower jaw.
- Cattle have **12 premolars and 12 molars**, giving a total of 24 cheek teeth.
- The total therefore reaches **32 permanent teeth** in the mature animal.

Information Booster:

- Cattle are **heterodont**, possessing different types of teeth.
- The dental pad replaces upper incisors.
- Lower incisors are used to grasp and cut forage against the dental pad.
- Premolars and molars are adapted for **grinding and mastication**.
- Age estimation in cattle can partly be performed by examining the **eruption and wear of permanent incisors**.

Why Other Options are Incorrect:

(b) 36

- Cattle do not normally possess 36 permanent teeth.

(c) 30

- This is lower than the normal permanent dental count.

(d) 34

- This does not correspond to the normal adult cattle dental formula.

(e) None of the above

- Incorrect because the correct number is **32**.

Q4. The material produced by controlled fermentation of crops under anaerobic condition is:

- (a) Husk
- (b) Hay
- (c) Silage
- (d) Straw
- (e) None of the above

S4. Ans. (c)

Sol.

- **Silage** is the feed material produced by the **controlled anaerobic fermentation of green or succulent forage crops**. Therefore, **option (c)** is correct.
- During silage making, chopped green fodder is stored under conditions where oxygen is excluded or greatly reduced.
- Beneficial **lactic acid bacteria** ferment soluble carbohydrates in the forage and produce organic acids, particularly lactic acid.

- The resulting acidic environment inhibits undesirable microorganisms and helps preserve the fodder.
- Silage allows green fodder to be conserved for use during periods when fresh forage is unavailable.
- Common silage crops include **maize, sorghum, oats, and certain grasses and legumes.**

Information Booster:

- **Process:** Controlled anaerobic fermentation.
- **Main beneficial microorganisms:** Lactic acid bacteria.
- **Important product:** Lactic acid.
- **Common silage crop:** Maize.
- Silage generally retains more moisture than hay and is stored as a fermented feed.

Why Other Options are Incorrect:

(a) Husk

- Husk is the protective covering of grains or other plant parts and is not produced through anaerobic fermentation.

(b) Hay

- Hay is produced primarily by **drying forage to a low moisture content**, not by anaerobic fermentation.

(d) Straw

- Straw consists mainly of dried stalks and residues remaining after harvesting cereal grains.

(e) None of the above

- Incorrect because the fermented material is **silage**.

Q5. Banana belongs to which family?

- (a) Bromeliaceae
- (b) Anacardiaceae
- (c) Musaceae
- (d) Caricaceae
- (e) None of the above

S5. Ans. (c)

Sol.

- Banana belongs to the family **Musaceae**; therefore, **option (c)** is correct.
- The cultivated banana is mainly associated with the genus **Musa**.
- Banana is an important **tropical fruit crop** cultivated extensively in India.
- The apparent stem of banana is a **pseudostem**, formed by tightly overlapping leaf sheaths.
- The underground structure is a **rhizome or corm-like stem base**, from which roots, leaves, suckers, and the inflorescence arise.
- Banana is generally propagated commercially through **suckers and tissue-cultured planting material**.

Information Booster:

- **Family:** Musaceae.
- **Genus:** *Musa*.
- **Crop type:** Tropical fruit crop.
- The banana plant is a **large herbaceous monocot**, not a true woody tree.
- Commercial cultivation commonly uses **suckers or tissue-culture plants**.

Why Other Options are Incorrect:

(a) Bromeliaceae

- This family includes plants such as **pineapple**, not banana.

(b) Anacardiaceae

- This family includes important fruit crops such as **mango and cashew**.

(d) Caricaceae

- **Papaya** belongs to the family Caricaceae.

(e) None of the above

- Incorrect because banana belongs to **Musaceae**.

Q6. The total depth of water required by a crop during the entire period of the crop in the field is known as:

- Intensity of irrigation
- Base of water
- Duty of water

- (d) Delta
- (e) None of the above

S6. Ans. (d)

Sol.

- The **total depth of water required by a crop during its entire crop period** is called **Delta (Δ)**. Therefore, **option (d)** is correct.
- Delta represents the total depth of water that would be applied to the crop over the entire base period if the irrigation requirement is expressed as an equivalent depth.
- It is generally expressed in units of **depth**, such as centimetres or metres.
- Delta is an important concept in **irrigation engineering and water-resource planning**.
- It differs from **duty**, which expresses the area irrigated by a unit discharge of water during the crop's base period.
- Delta is useful for determining the overall water requirement of crops and planning irrigation systems.

Information Booster:

- **Delta:** Total depth of water required during the crop period.
- **Unit:** Usually centimetres or metres.
- **Duty:** Area irrigated by a unit discharge.
- **Base period:** Time between the first watering and the last watering of a crop.
- Delta is an important parameter for estimating **crop water requirements**.

Why Other Options are Incorrect:

(a) Intensity of irrigation

- Intensity of irrigation generally refers to the proportion of culturable command area proposed to be irrigated during a specified period, not total crop water depth.

(b) Base of water

- This is not the standard irrigation-engineering term for total crop water depth.

(c) Duty of water

- Duty indicates the area that can be irrigated by a unit quantity/discharge of water during the base period.

(e) None of the above

- Incorrect because the correct term is **Delta**.

Q7. Incisors are absent from the upper jaws of which of the following?

- (a) Cattle
- (b) Dog
- (c) Cat
- (d) Pig
- (e) None of the above

S7. Ans. (a)

Sol.

- **Cattle lack upper incisors**; instead, they possess a tough **dental pad** in the front of the upper jaw. Therefore, **option (a)** is correct.
- The lower incisors work against this dental pad to grasp and cut grasses during grazing.
- This dental arrangement is characteristic of **ruminants such as cattle, buffaloes, sheep, and goats**.
- The absence of upper incisors allows cattle to crop vegetation efficiently using the lower incisors and dental pad.
- Cattle possess **eight lower incisors**, including the incisiform canine that functions as an incisor.

Information Booster:

- Cattle are **ruminant herbivores**.
- Upper front teeth are replaced by a **dental pad**.
- Lower incisors are important for grazing.
- Cheek teeth grind forage after it has been gathered.
- The dental arrangement is adapted to a diet dominated by fibrous plant material.

Why Other Options are Incorrect:

(b) Dog

- Dogs possess upper and lower incisors as part of their carnivorous-type dentition.

(c) Cat

- Cats also possess incisors in both upper and lower jaws.

(d) Pig

- Pigs possess upper incisors and therefore do not have the cattle-type dental pad arrangement.

(e) None of the above

- Incorrect because cattle are the correct example.

Q8. Scientific name of Sunhemp is:

- (a) *Corchorus* spp.
- (b) *Carthamus sativa*
- (c) *Gossypium* spp.
- (d) *Crotalaria juncea*
- (e) None of the above

S8. Ans. (d)

Sol.

- The scientific name of **sunhemp** is *Crotalaria juncea*; therefore, **option (d)** is correct.
- Sunhemp is an important **fibre crop and green-manure crop** belonging to the family **Fabaceae**.
- It is valued as a green manure because of its ability to produce substantial biomass and contribute nitrogen through its association with nitrogen-fixing bacteria.
- The crop is generally incorporated into the soil before maturity to improve soil organic matter and nutrient status.
- Sunhemp fibre can also be used for making **ropes, twines, cordage, and related products**.

Information Booster:

- **Common name:** Sunhemp.
- **Scientific name:** *Crotalaria juncea*.
- **Family:** Fabaceae.
- Important uses: **green manure and fibre**.
- It is a **leguminous crop** capable of biological nitrogen fixation.

Why Other Options are Incorrect:

(a) *Corchorus* spp.

- *Corchorus* species are associated with **jute**, particularly *Corchorus capsularis* and *C. olitorius*.

(b) *Carthamus sativa*

- Safflower is associated with the genus *Carthamus*; the option does not represent sunhemp.

(c) *Gossypium* spp.

- *Gossypium* is the genus of **cotton**.

(e) **None of the above**

- Incorrect because *Crotalaria juncea* is the scientific name of sunhemp.

Q9. Which of the following is citrate soluble fertilizer?

- (a) Basic slag
- (b) Dicalcium phosphate
- (c) Both A and B
- (d) Rock phosphate
- (e) None of the above

S9. Ans. (c)

Sol.

- **Basic slag and dicalcium phosphate** are classified as **citrate-soluble phosphate fertilizers**, making **option (c)** correct.
- Citrate-soluble phosphorus refers to the fraction of phosphorus that dissolves in an **ammonium citrate solution** under prescribed analytical conditions.
- Basic slag contains phosphorus in forms that are relatively more available than the phosphorus in untreated rock phosphate.
- Dicalcium phosphate is also a relatively available phosphate source and is soluble in citrate solution.
- The distinction between water-soluble, citrate-soluble, and citrate-insoluble phosphorus is important when evaluating the agronomic availability of phosphate fertilizers.

Information Booster:

- **Basic slag:** By-product of the steel industry and contains phosphorus along with calcium.
- **Dicalcium phosphate:** Contains phosphorus in a relatively available form.
- **Rock phosphate:** Generally has low water solubility and its effectiveness depends strongly on soil conditions.
- Citrate-soluble phosphorus is an important quality parameter for certain phosphate fertilizers.

- Phosphate fertilizers differ substantially in **solubility and plant availability**.

Why Other Options are Incorrect:

(a) Basic slag

- Basic slag is indeed citrate soluble, but the question asks which fertilizer(s) are citrate soluble, and **both A and B** are correct.

(b) Dicalcium phosphate

- Dicalcium phosphate is also citrate soluble, so selecting it alone is incomplete.

(d) Rock phosphate

- Rock phosphate is generally characterized by **low solubility**, particularly in neutral to alkaline soils, and is not the correct choice here.

(e) None of the above

- Incorrect because **both basic slag and dicalcium phosphate** are citrate-soluble.

Q10. Which of the following are the varieties of mango?

- (a) Bombay Green
- (b) Kesar
- (c) Alphonso
- (d) All of the above
- (e) None of the above

S10. Ans. (d)

Sol.

- **Bombay Green, Kesar, and Alphonso** are all recognized varieties of mango; therefore, **option (d)** is correct.

- **Bombay Green** is an important mango cultivar associated particularly with northern Indian mango-growing regions.

- **Kesar** is a highly valued mango cultivar associated especially with **Gujarat**, particularly the Gir region.

- **Alphonso**, popularly known as **Hapus**, is one of India's premium mango cultivars and is strongly associated with Maharashtra and the Konkan region.

- These cultivars differ in **fruit size, colour, flavour, pulp characteristics, maturity period, and geographical adaptation**.

Information Booster:

- **Bombay Green:** Important North Indian mango cultivar.
- **Kesar:** Famous Gujarat mango cultivar, particularly associated with Gir.
- **Alphonso/Hapus:** Premium cultivar associated with Maharashtra and the Konkan region.
- Mango belongs to the family **Anacardiaceae**.
- Scientific name of mango: *Mangifera indica*.

Why Other Options are Incorrect:

(a) Bombay Green

- This is a genuine mango cultivar, so the option itself is correct but incomplete because other listed cultivars are also mango varieties.

(b) Kesar

- Kesar is a recognized mango cultivar, particularly famous in Gujarat.

(c) Alphonso

- Alphonso is also a recognized mango cultivar, widely known for its excellent eating quality.

(e) None of the above

- Incorrect because all three named cultivars—**Bombay Green, Kesar, and Alphonso**—are **mango varieties**.

Q11. Brining is a solution of

- (a) Salt in water
- (b) Oil in water
- (c) Sugar in water
- (d) All of the above
- (e) None of the above

S11. Ans. (a)

Sol.

- **Brining** refers to the process of preserving or treating food using a **salt solution in water**.
- A brine is essentially an aqueous solution containing dissolved **sodium chloride (common salt)**.
- Brining is widely used in the preservation and processing of foods such as vegetables, meat, fish, olives, and certain dairy products.

- Salt reduces the availability of water for microorganisms and creates conditions that inhibit the growth of many spoilage organisms.
- Depending on the food and processing method, brining may also contribute to flavour development and texture modification.

Information Booster:

- **Brine:** Salt dissolved in water.
- **Major component:** Sodium chloride (NaCl).
- Used in **food preservation and processing**.
- Salt helps control microbial growth by reducing available water.
- Brining should be distinguished from **pickling**, which may additionally involve acids such as vinegar.

Why Other Options are Incorrect:**(b) Oil in water**

- An oil-water mixture is not termed brine.

(c) Sugar in water

- A sugar solution is not brine; sugar solutions are used in processes such as syrup preparation.

(d) All of the above

- Incorrect because brine specifically refers to a **salt solution**, not oil or sugar solutions.

(e) None of the above

- Incorrect because salt dissolved in water is correctly defined as brine.

Q12. Foot and mouth disease is caused by which of the following infectious agent?

- (a) Giardia
- (b) Virus
- (c) Aphtho virus
- (d) Clostridium perfringens
- (e) None of the above

S12. Ans. (c)

Sol.

- Foot-and-mouth disease (FMD) is caused by **Foot-and-mouth disease virus (FMDV)**, which belongs to the genus **Aphthovirus** of the family **Picornaviridae**. Therefore, among the given options, **option (c)** is the most specific and correct answer.
- FMD is a highly contagious viral disease affecting **cloven-hoofed animals**, including cattle, buffaloes, sheep, goats, pigs, and several wild species.
- The disease is characterized by **fever followed by vesicle formation** in the mouth, on the tongue, on the feet, and around the teats in susceptible animals.
- Excessive salivation and difficulty in feeding are common manifestations when oral lesions are present.
- FMD is economically important because it causes reduced milk production, weight loss, reduced working capacity, reproductive effects, and restrictions on animal movement and trade.

Information Booster:

- **Causative agent:** Foot-and-mouth disease virus.
- **Genus:** *Aphthovirus*.
- **Family:** Picornaviridae.
- Important serotypes include **O, A, C, Asia 1, SAT 1, SAT 2, and SAT 3**; their distribution varies geographically.
- FMD is distinct from **hand, foot and mouth disease in humans**, which is caused by different enteroviruses.

Why Other Options are Incorrect:

(a) Giardia

- *Giardia* is a protozoan parasite associated primarily with intestinal disease and is not the causative agent of FMD.

(b) Virus

- This is broadly correct because FMD is viral, but **Aphthovirus** is the specific taxonomic identification provided by option (c).

(d) Clostridium perfringens

- This bacterium is associated with several **clostridial diseases and enterotoxaemia**, not FMD.

(e) None of the above

- Incorrect because **Aphthovirus** is the causative viral genus.

Q13. Home tract of Cochin Poultry is

- (a) Sri Lanka
- (b) India
- (c) China
- (d) UAE
- (e) None of the above

S13. Ans. (b)

Sol.

- **Cochin** is an established breed/type of poultry associated with **China**, particularly the Shanghai region, so the given answer **(b) India is incorrect**.
- Historically, the Cochin breed was developed from large Asian chickens and was introduced to the Western world from China.
- The breed is known for its **large body size, feathered shanks and toes, and docile temperament**.
- Cochin chickens are classified primarily as a **heavy breed** and have historically been valued for meat production and exhibition.
- Therefore, if this question is asking specifically for the **home tract/origin of Cochin poultry**, the correct answer should be **China**, i.e. **option (c)**.

Information Booster:

- **Breed:** Cochin.
- **Origin/home tract:** China.
- **Type:** Heavy poultry breed.
- Characteristic feature: **Heavily feathered legs and feet**.
- The breed is also known for its calm temperament and large body size.

Why Other Options are Incorrect:

(a) Sri Lanka

- Cochin is not native to Sri Lanka.

(b) India

- India has numerous indigenous poultry breeds, but Cochin originated in **China**.

(c) China

- **Correct answer.** Cochin is historically associated with China.

(d) UAE

- The UAE is not the home tract of Cochin poultry.

(e) None of the above

- Incorrect because **China** is included as option (c).

Q14. Nutrient composition of farm yard manure is

- (a) 1% N, 1% P_2O_5 and 1% K_2O
- (b) 1% N, 2% P_2O_5 and 25% K_2O
- (c) 0.5% N, 0.2% P_2O_5 and 0.5% K_2O
- (d) 2% N, 2% P_2O_5 and 2% K_2O
- (e) None of the above

S14. Ans. (c)

Sol.

- Farmyard manure (FYM) is a decomposed mixture of **cattle dung, urine, litter, and other farm wastes.**
- A commonly used approximate nutrient composition of well-decomposed FYM is about **0.5% nitrogen (N), 0.2% phosphorus as P_2O_5 , and 0.5% potassium as K_2O .**
- Therefore, **option (c)** is the correct answer.
- FYM is primarily valued for improving **soil physical condition, organic matter content, water-holding capacity, and microbial activity**, in addition to supplying plant nutrients.
- Its nutrient content can vary considerably depending on animal species, bedding material, storage method, decomposition, and handling.

Information Booster:

- FYM is an important **organic manure.**
- Approximate composition: **0.5% N, 0.2% P_2O_5 and 0.5% K_2O .**
- Adds organic matter to soil.
- Improves soil structure and water-holding capacity.
- Nutrients in FYM are released comparatively slowly.

Why Other Options are Incorrect:

- (a) 1% N, 1% P_2O_5 and 1% K_2O

- These values are considerably higher than the commonly cited average composition of FYM.

(b) 1% N, 2% P_2O_5 and 25% K_2O

- The potassium value of 25% is unrealistically high for FYM.

(d) 2% N, 2% P_2O_5 and 2% K_2O

- These nutrient concentrations are much higher than the standard approximate FYM composition.

(e) None of the above

- Incorrect because option (c) gives the commonly accepted approximate composition.

Q15. Scientific name of pop corn is

- (a) *Zea mays muricata*
- (b) *Zea mays saccharata*
- (c) *Zea mays indentata*
- (d) *Zea mays everta*
- (e) None of the above

S15. Ans. (d)

Sol.

- The botanical classification traditionally used for **popcorn** is *Zea mays everta*. Therefore, **option (d)** is correct.
- Popcorn is a type of maize characterized by kernels with a hard outer layer and suitable internal moisture.
- When heated, the moisture inside the kernel turns into steam and creates pressure until the kernel ruptures and expands.
- Popcorn is commercially important as a food and snack crop.
- In traditional maize classification, *Zea mays everta* is recognized as the **popcorn group**.

Information Booster:

- **Crop:** Maize.
- **Popcorn:** *Zea mays everta*.
- It has hard, flinty kernels.
- Kernel expansion occurs because of **steam pressure generated during heating**.
- Popcorn belongs to the species *Zea mays*.

Why Other Options are Incorrect:**(a) *Zea mays muricata***

- This is not the botanical designation traditionally used for popcorn.

(b) *Zea mays saccharata*

- This refers to the **sweet corn** group.

(c) *Zea mays indentata*

- This corresponds to the **dent corn** group.

(e) None of the above

- Incorrect because *Zea mays everta* is the traditional botanical designation for popcorn.

Q16. A geohydrological unit draining to a common point by a system of drains is known as

- (a) Rain harvesting
- (b) Irrigation
- (c) Drainage
- (d) Watershed
- (e) None of the above

S16. Ans. (d)

Sol.

- A **watershed** is a geographical or hydrological area from which water drains towards a **common outlet or drainage point**. Therefore, **option (d)** is correct.
- A watershed is defined by the surrounding **topographic divides**, which determine the direction of surface-water flow.
- Rainfall occurring within the watershed generally contributes runoff to the common drainage outlet.
- Watershed management aims at conserving **soil and water**, reducing erosion, improving groundwater recharge, and increasing productive use of rainwater.
- Watersheds can vary greatly in size, ranging from small micro-watersheds to large river basins.

Information Booster:

- Watershed is a basic unit of **hydrological planning**.
- It has a defined **drainage outlet**.
- Watershed management includes soil and water conservation.

- Important measures include **contour bunding, check dams, farm ponds, vegetative barriers, and groundwater recharge**.
- The term is closely related to **catchment and drainage basin** concepts.

Why Other Options are Incorrect:

(a) Rain harvesting

- Rainwater harvesting is the collection and storage of rainwater; it is not the geographical drainage unit itself.

(b) Irrigation

- Irrigation is the artificial application of water to crops.

(c) Drainage

- Drainage refers to the removal or disposal of excess water, not the geographical unit draining to a common point.

(e) None of the above

- Incorrect because the correct term is **watershed**.

Q17. Which of the following term is used for 'short legged stocky horse'?

- (a) Filly
- (b) Colt
- (c) Cob
- (d) Hinny
- (e) None of the above

S17. Ans. (c)

Sol.

- A **cob** is a type of **short-legged, sturdy and stocky horse**, making **option (c)** correct.
- Cobs generally have a compact body, strong build, relatively short legs, and a calm temperament.
- They are traditionally valued as **riding and driving horses** and are known for their strength and versatility.
- The term "cob" describes a type or build rather than simply indicating the age or sex of a horse.

Information Booster:

- **Cob:** Short-legged, sturdy, stocky horse type.

- Commonly associated with strength and good temperament.
- Suitable for riding and driving.
- **Filly:** Young female horse.
- **Colt:** Young male horse.

Why Other Options are Incorrect:

(a) Filly

- A filly is a **young female horse**, not specifically a short-legged stocky horse.

(b) Colt

- A colt generally refers to a **young male horse**.

(d) Hinny

- A hinny is the hybrid offspring of a **male horse and a female donkey**, not a type of stocky horse.

(e) None of the above

- Incorrect because **cob** correctly describes the horse type.

Q18. Which of the following crop does not belong to Zingiberaceae?

- (a) Black pepper
- (b) Ginger
- (c) Cardamom
- (d) Turmeric
- (e) None of the above

S18. Ans. (a)

Sol.

- **Black pepper** does not belong to the family Zingiberaceae; therefore, **option (a)** is correct.
- Black pepper belongs to the family **Piperaceae** and has the scientific name ***Piper nigrum***.
- **Ginger** belongs to Zingiberaceae and is scientifically known as ***Zingiber officinale***.
- **Turmeric** belongs to Zingiberaceae and is scientifically known as ***Curcuma longa***.
- **Cardamom** is also a member of the Zingiberaceae family and belongs to the genus ***Elettaria***.

Information Booster:

- **Zingiberaceae:** Ginger family.

- Ginger — *Zingiber officinale*.
- Turmeric — *Curcuma longa*.
- Cardamom — *Elettaria cardamomum*.
- Black pepper — *Piper nigrum*, family **Piperaceae**.

Why Other Options are Incorrect:

(b) Ginger

- Ginger is a member of **Zingiberaceae**.

(c) Cardamom

- Cardamom belongs to **Zingiberaceae**.

(d) Turmeric

- Turmeric is also a member of **Zingiberaceae**.

(e) None of the above

- Incorrect because black pepper is clearly the crop that does not belong to Zingiberaceae.

Q19. Most frequently occurred item among the following is known as

- (a) Harmonic mean
- (b) Median
- (c) Mean
- (d) Mode
- (e) None of the above

S19. Ans. (d)

Sol.

- The value or observation that occurs **most frequently** in a data set is called the **mode**. Therefore, **option (d)** is correct.
- Mode is one of the three commonly used measures of central tendency, along with **mean and median**.
- A data set can have one mode, more than one mode, or no unique mode.
- Mode is particularly useful for **qualitative or categorical data**, where numerical averaging may not be meaningful.
- Unlike arithmetic mean, the mode is not substantially affected by extreme numerical observations.

Information Booster:

- **Mode:** Most frequently occurring value.
- **Median:** Middle value after arranging observations in order.
- **Mean:** Arithmetic average of observations.
- A distribution with one mode is called **unimodal**.
- Mode can be useful for identifying the most common category, size, variety, or preference.

Why Other Options are Incorrect:

(a) Harmonic mean

- Harmonic mean is a specialized average commonly used for rates and ratios; it is not the most frequently occurring value.

(b) Median

- Median is the central positional value, not the most frequently occurring value.

(c) Mean

- Mean is the arithmetic average and does not necessarily correspond to the most frequent observation.

(e) None of the above

- Incorrect because **mode** is precisely the most frequently occurring value.

Q20. Which organism is responsible for lactic acid fermentation?

- (a) Lactobacilli
- (b) Streptococci
- (c) Both A and B
- (d) Clostridium
- (e) None of the above

S20. Ans. (c)

Sol.

- **Lactobacilli and Streptococci** are important microorganisms involved in **lactic acid fermentation**, making **option (c)** correct.
- Lactic acid bacteria convert fermentable carbohydrates into **lactic acid** as a major fermentation product.

- Genera such as *Lactobacillus* and *Streptococcus* have important roles in food fermentation and dairy products.
- In dairy fermentation, lactic acid production lowers the pH, leading to **coagulation of milk proteins** and development of characteristic flavour and texture.
- Lactic acid fermentation is important in the manufacture of products such as **curd, yogurt, cultured dairy products, and certain fermented vegetables**.

Information Booster:

- Major group: **Lactic acid bacteria (LAB)**.
- Important organisms include *Lactobacillus*, *Lactococcus*, *Streptococcus*, and *Leuconostoc* species.
- Major fermentation product: **Lactic acid**.
- Reduction in pH helps inhibit many undesirable microorganisms.
- Lactic acid fermentation is important in **dairy technology, food preservation, and silage fermentation**.

Why Other Options are Incorrect:

(a) Lactobacilli

- Lactobacilli are indeed important lactic acid-producing bacteria, but selecting only A is incomplete because Streptococci also participate in lactic acid fermentation.

(b) Streptococci

- Streptococci, particularly lactic acid-producing species used in dairy fermentation, can produce lactic acid, but they are not the only organisms involved.

(d) Clostridium

- *Clostridium* species are associated with various anaerobic fermentations and can produce products such as butyric acid, gases, and other metabolites; they are not the principal organisms intended here.

(e) None of the above

- Incorrect because both **Lactobacilli and Streptococci** are associated with lactic acid fermentation.

Q21. Watershed of size 100–1000 ha is known as

- (a) Micro watershed
- (b) Milli watershed

- (c) Macro watershed
- (d) Mini watershed
- (e) None of the above

S21. Ans. (d)

Sol.

- A watershed having an area of approximately **100–1000 hectares** is classified as a **mini watershed**. Therefore, **option (d)** is correct.
- Watersheds are commonly classified into different categories according to their geographical or drainage area.
- A mini watershed represents a relatively small hydrological unit and is suitable for localized planning of **soil and water conservation measures**.
- Watershed-based planning considers the entire area contributing runoff to a common outlet.
- Mini-watershed development may include measures such as **contour bunding, check dams, farm ponds, vegetative barriers, and groundwater recharge structures**.

Information Booster:

- Watershed classification is based mainly on **drainage area**.
- **Mini watershed:** approximately 100–1000 ha.
- Small watersheds permit relatively localized and participatory watershed management.
- Watershed management aims at conserving **soil, water and vegetation resources**.
- The ultimate objective is sustainable use of available natural resources and improvement of agricultural productivity.

Why Other Options are Incorrect:

(a) Micro watershed

- A micro watershed is generally a smaller hydrological unit than the size specified in the question.

(b) Milli watershed

- Milli watershed represents a still smaller drainage unit and does not correspond to the 100–1000 ha classification given here.

(c) Macro watershed

- Macro watersheds cover substantially larger areas than a mini watershed.

(e) None of the above

- Incorrect because 100–1000 ha is classified as a mini watershed.

Q22. Trichogramma is an egg parasite against the eggs of

- (a) Rice stem borer
- (b) Cabbage diamond back moth
- (c) Gram pod borer
- (d) All of the above
- (e) None of the above

S22. Ans. (d)

Sol.

- **Trichogramma** is an important **egg parasitoid** used in biological control against the eggs of several economically important insect pests. Therefore, **option (d)** is correct.
- Species of *Trichogramma* parasitize the eggs of **rice stem borers, diamondback moth, gram pod borer**, and several other lepidopteran pests.
- The female parasitoid lays its eggs inside the host insect egg.
- The developing *Trichogramma* larva feeds on the contents of the pest egg and prevents the pest larva from emerging.
- Parasitized eggs commonly become **dark or black**, which is a useful field indication of parasitization.
- *Trichogramma* is widely used in **augmentative biological control** through the release of parasitized host eggs or cards.

Information Booster:

- **Type:** Egg parasitoid.
- **Important genus:** *Trichogramma*.
- Mainly attacks eggs of **Lepidoptera**.
- Used extensively in biological control programmes.
- Commonly supplied through **Trichogramma egg cards** for field release.

Why Other Options are Incorrect:

- (a) **Rice stem borer**

- *Trichogramma* does parasitize rice stem-borer eggs, but this option is incomplete because it also attacks eggs of other pests listed.

(b) Cabbage diamondback moth

- *Trichogramma* can parasitize diamondback moth eggs, but this is not the only applicable pest.

(c) Gram pod borer

- *Trichogramma* also parasitizes gram pod-borer eggs, but again this option is incomplete.

(d) All of the above

- Correct because *Trichogramma* is an egg parasitoid used against the eggs of **all three listed pests**.

(e) None of the above

- Incorrect because all three listed pests are recognized hosts of *Trichogramma* parasitoids.

Q23. Which of the following is/are the example of variable costs?

- (a) Fertilizers
- (b) Water
- (c) Seeds
- (d) All of the above
- (e) None of the above

S23. Ans. (d)

Sol.

- **Fertilizers, water and seeds** can all constitute **variable costs** in agricultural production. Therefore, **option (d)** is correct.

- Variable costs are production expenses that generally **change with the level of output or intensity of production**.

- Seed expenditure varies according to the **area planted, crop grown, seed rate and seed price**.

- Fertilizer expenditure varies with the **area under cultivation and quantity of fertilizer applied**.

- Water or irrigation expenditure can also vary with the number of irrigations, volume of water used, energy consumption, or irrigation charges.

- These costs are therefore distinguished from fixed costs such as certain land-related or long-term capital expenses.

Information Booster:

- **Variable cost:** Changes with the level of production or input use.
- Examples include **seed, fertilizer, pesticides, hired labour, irrigation and fuel.**
- Fixed costs generally do not change directly with short-run output.
- Understanding variable costs helps farmers determine the economically optimal level of input use.
- Cost concepts are important in **farm management and production economics.**

Why Other Options are Incorrect:

(a) Fertilizers

- Fertilizers are a variable input, but this option does not include the other correct examples.

(b) Water

- Water/irrigation expenditure can be variable, but this option alone is incomplete.

(c) Seeds

- Seeds are variable production inputs, but they are not the only correct example.

(d) All of the above

- Correct because **fertilizers, water and seeds** can all represent variable production costs.

(e) None of the above

- Incorrect because all three listed inputs can contribute to variable costs.

Q24. Which of the following is non-expanding type clay mineral?

- (a) Illite
- (b) Beidellite
- (c) Montmorillonite
- (d) Nontronite
- (e) None of the above

S24. Ans. (a)

Sol.

- **Illite** is classified as a **non-expanding or non-swelling clay mineral**. Therefore, **option (a)** is correct.
- Illite is a **2:1 type clay mineral**, meaning that two silica tetrahedral sheets surround one alumina or octahedral sheet.

- Potassium ions occur between the layers and help hold the mineral structure together.
- Because these interlayer potassium ions strongly restrict expansion, illite does not swell substantially when wetted.
- In contrast, **smectite minerals such as montmorillonite** have a much greater capacity for expansion and shrinkage.

Information Booster:

- **Illite:** 2:1 non-expanding clay.
- **Montmorillonite:** 2:1 expanding clay of the smectite group.
- **Beidellite:** Smectite-group expanding clay.
- **Nontronite:** Iron-rich smectite and generally expanding.
- Clay mineral type strongly influences **soil swelling, shrinkage, cation exchange capacity and water retention**.

Why Other Options are Incorrect:

(b) Beidellite

- Beidellite belongs to the **smectite group** and is an expanding clay mineral.

(c) Montmorillonite

- Montmorillonite is a classic **expanding 2:1 clay mineral**.

(d) Nontronite

- Nontronite is an iron-rich smectite and has expanding properties.

(e) None of the above

- Incorrect because **illite** is a non-expanding clay mineral.

Q25. Natural wax present on the surface of fruit is called as

- Canning
- Oiling
- Bloom
- All of the above
- None of the above

S25. Ans. (c)

Sol.

- The natural waxy coating present on the surface of many fruits is known as **bloom**. Therefore, **option (c)** is correct.
- Bloom forms a thin protective layer on the fruit surface and can reduce **water loss** from the fruit.
- It also provides some protection against mechanical injury and microbial infection.
- The wax layer is particularly visible on fruits such as **grapes, plums and certain berries**, where it may give the surface a characteristic whitish appearance.
- Post-harvest handling can remove some of this natural coating, which is why edible wax coatings may sometimes be applied commercially to selected fruits.

Information Booster:

- **Bloom:** Natural waxy coating on fruit surfaces.
- Helps reduce **moisture loss**.
- Can provide a barrier against some microorganisms.
- Particularly conspicuous on grapes and plums.
- Artificial waxing is a separate **post-harvest technology** and should not be confused with natural bloom.

Why Other Options are Incorrect:

(a) Canning

- Canning is a food preservation method involving heat processing and hermetic sealing.

(b) Oiling

- Oiling is a post-harvest treatment involving application of oil and is not the natural wax layer.

(d) All of the above

- Incorrect because only **bloom** refers to the natural wax coating.

(e) None of the above

- Incorrect because the natural coating is called **bloom**.

Q26. Krebs cycle occurs in

- Chlorophyll
- Mitochondria
- Chloroplast

- (d) Cytoplasm
- (e) None of the above

S26. Ans. (b)

Sol.

- In eukaryotic plant and animal cells, the **Krebs cycle, or citric acid cycle, occurs primarily in the mitochondrial matrix**. Therefore, **option (b)** is correct.
- The cycle is a central component of **aerobic respiration**.
- It involves a sequence of reactions that oxidize acetyl groups and generate reduced electron carriers.
- These reduced carriers subsequently provide electrons to the **electron transport chain**, which is associated with the inner mitochondrial membrane.
- The Krebs cycle therefore plays an important role in cellular energy metabolism.

Information Booster:

- Also called **citric acid cycle** or **TCA cycle**.
- Site in eukaryotic cells: **Mitochondrial matrix**.
- It is an important stage of aerobic respiration.
- Produces reduced electron carriers such as **NADH and FADH₂**.
- These carriers contribute to ATP generation through **oxidative phosphorylation**.

Why Other Options are Incorrect:

(a) Chlorophyll

- Chlorophyll is a photosynthetic pigment, not a cellular organelle where the Krebs cycle occurs.

(c) Chloroplast

- Chloroplasts are the main organelles of photosynthesis; the Krebs cycle is not located there in normal plant cells.

(d) Cytoplasm

- Glycolysis occurs in the cytoplasm, whereas the Krebs cycle occurs in the mitochondrial matrix.

(e) None of the above

- Incorrect because mitochondria contain the site of the Krebs cycle.

Q27. In water erosion removal of soil particles due to rain drops is called as

- (a) Gully erosion
- (b) Splash erosion
- (c) Sheet erosion
- (d) Rill erosion
- (e) None of the above

S27. Ans. (b)

Sol.

- The detachment and movement of soil particles caused directly by the **impact of falling raindrops** is called **splash erosion**. Therefore, **option (b)** is correct.
- Rain drops strike exposed soil with considerable kinetic energy.
- Their impact breaks soil aggregates and detaches soil particles from the surface.
- The detached particles may subsequently be transported by flowing surface water.
- Splash erosion is often considered an important initial stage of water erosion and can contribute to the development of sheet, rill and eventually gully erosion.

Information Booster:

- **Splash erosion:** Caused by raindrop impact.
- **Sheet erosion:** Relatively uniform removal of a thin layer of soil.
- **Rill erosion:** Formation of small channels by concentrated runoff.
- **Gully erosion:** Development of larger and deeper channels that cannot normally be removed by ordinary tillage.
- Vegetative cover and residue management help reduce raindrop impact.

Why Other Options are Incorrect:

(a) Gully erosion

- Gully erosion involves substantial concentration of runoff into large channels.

(c) Sheet erosion

- Sheet erosion involves relatively uniform removal of soil by shallow surface runoff rather than direct raindrop impact.

(d) Rill erosion

- Rill erosion produces small channels formed by concentrated runoff.

(e) None of the above

- Incorrect because the direct impact of raindrops causes **splash erosion**.

Q28. Which of the following is known as kill disease of rice?

- (a) Bunt disease
- (b) Brown leaf spot
- (c) Bacterial leaf blight
- (d) Bacterial leaf streak
- (e) None of the above

S28. Ans. (c)

Sol.

- **Bacterial leaf blight (BLB)** of rice is associated with the characteristic "**kresek**" or **wilt phase**, which can cause rapid death of young plants and is therefore sometimes referred to as the "**killer**" or **kill disease** in agricultural literature. Therefore, **option (c)** is correct.
- The disease is caused by the bacterium *Xanthomonas oryzae* pv. *oryzae*.
- It is one of the most important bacterial diseases of rice.
- In the severe **kresek phase**, infected seedlings or young plants may wilt rapidly and die.
- In older plants, the disease commonly produces **yellowish to straw-coloured lesions along the leaf margins**, which may extend towards the leaf tip.

Information Booster:

- **Disease:** Bacterial leaf blight of rice.
- **Causal organism:** *Xanthomonas oryzae* pv. *oryzae*.
- **Kresek:** Severe systemic/wilting phase, particularly in young plants.
- Spread is favoured by **rain, wind-driven rain, irrigation water and wounds**.
- Use of resistant varieties and integrated disease management is important for control.

Why Other Options are Incorrect:

(a) Bunt disease

- Rice bunt is a different disease and is not the disease associated with the characteristic kresek phase.

(b) Brown leaf spot

- Brown spot is caused by the fungus *Bipolaris oryzae* and produces characteristic brown lesions.

(c) Bacterial leaf blight

- Correct. It is caused by *Xanthomonas oryzae* pv. *oryzae* and its severe kresek phase can cause rapid plant death.

(d) Bacterial leaf streak

- Bacterial leaf streak is caused by *Xanthomonas oryzae* pv. *oryzicola* and is distinct from bacterial leaf blight.

(e) None of the above

- Incorrect because bacterial leaf blight is the correct answer.

Q29. Which of the following are growth inhibitors?

- (a) Auxin and ethylene
- (b) Cytokinin and Absciscic acid
- (c) Absciscic acid and ethylene
- (d) All of the above
- (e) None of the above

S29. Ans. (c)

Sol.

- **Absciscic acid (ABA) and ethylene** are traditionally classified as plant growth-inhibiting or growth-retarding hormones. Therefore, **option (c)** is the expected answer.
- ABA is strongly associated with **growth inhibition, seed dormancy, stomatal closure, and stress responses**.
- Ethylene can inhibit certain aspects of growth, particularly **cell elongation**, while promoting processes such as fruit ripening and senescence.
- Auxins and cytokinins are generally classified as **growth-promoting plant hormones**, although their effects depend on concentration, tissue, and physiological conditions.
- Plant hormones do not act independently; their effects are often determined by interactions among several hormones.

Information Booster:

- **ABA:** Important in seed dormancy and abiotic-stress responses.
- **Ethylene:** Gaseous plant hormone involved in ripening, senescence and abscission.
- **Auxin:** Important in cell elongation, apical dominance and root initiation.
- **Cytokinin:** Promotes cell division and delays leaf senescence.

- Modern plant physiology emphasizes **hormonal balance and interaction** rather than rigid growth-promoter/inhibitor categories.

Why Other Options are Incorrect:

(a) Auxin and ethylene

- Ethylene is associated with growth inhibition in several contexts, but **auxin is generally classified as a growth-promoting hormone**.

(b) Cytokinin and Absciscic acid

- ABA is a growth inhibitor, whereas **cytokinin generally promotes cell division and growth**.

(c) Absciscic acid and ethylene

- Correct under the traditional classification of plant growth regulators.

(d) All of the above

- Incorrect because auxin and cytokinin are not conventionally classified as growth inhibitors.

(e) None of the above

- Incorrect because ABA and ethylene provide the correct pair.

Q30. Sum of deviation of items from arithmetic mean (A.M.) is always

- (a) One
- (b) Zero
- (c) Both A and B
- (d) Two
- (e) None of the above

S30. Ans. (b)

Sol.

- The **algebraic sum of deviations of all observations from their arithmetic mean is always zero**. Therefore, **option (b)** is correct.
- The arithmetic mean is the balancing point of a distribution.
- Observations above the mean have positive deviations, while observations below the mean have negative deviations.
- When all these signed deviations are added together, the positive and negative deviations exactly balance each other.

- This is a fundamental mathematical property of the arithmetic mean and is widely used in statistical analysis.

Information Booster:

- Deviations are measured relative to a selected central value.
- For the arithmetic mean, the **sum of signed deviations is zero**.
- The property applies to both raw and grouped data when the arithmetic mean is correctly calculated.
- Squared deviations from the mean are used in measures such as **variance and standard deviation**.
- Mean is therefore an important reference point in measures of dispersion.

Why Other Options are Incorrect:

(a) One

- The sum is not always one; it is **zero**.

(b) Zero

- Correct.

(c) Both A and B

- Incorrect because the sum cannot simultaneously be one and zero.

(d) Two

- The sum of deviations from the arithmetic mean is not two.

(e) None of the above

- Incorrect because zero is provided as an option.

Q31. Karnal bunt of wheat is caused by

- Puccinia recondita*
- Urocystis tritici*
- Neovossia indica*
- Anguina tritici*
- None of the above

S31. Ans. (c)

Sol.

- Karnal bunt of wheat is caused by *Tilletia indica*, which was historically known as *Neovossia indica*. Therefore, under the **traditional nomenclature used in the question**, option (c) is correct.
- Karnal bunt is an important **seed- and soil-borne fungal disease of wheat**.
- The disease primarily affects the developing grain, replacing part of the grain contents with dark fungal spores.
- Infected grains may emit a characteristic **fishy or rotten-fish odour** because of volatile compounds associated with the disease.
- The disease is particularly important from a **quarantine and international trade** perspective because infected seed can spread the pathogen.

Information Booster:

- Current accepted name: *Tilletia indica*.
- Older name: *Neovossia indica*.
- Disease: **Karnal bunt of wheat**.
- Affected crop: Mainly **wheat**.
- Importance: Major **quarantine concern** in wheat production and trade.

Why Other Options are Incorrect:

(a) *Puccinia recondita*

- This is associated with **leaf/rust disease of wheat**, not Karnal bunt.

(b) *Urocystis tritici*

- This fungus is associated with **flag smut of wheat**, not Karnal bunt.

(c) *Neovossia indica*

- Correct under the **older/alternate taxonomic name**; the presently accepted name is *Tilletia indica*.

(d) *Anguina tritici*

- This is a nematode associated with **ear-cockle disease of wheat**, not Karnal bunt.

(e) None of the above

- Incorrect in the context of the nomenclature used in this question because *Neovossia indica* is the historical name for the Karnal bunt pathogen.

Q32. First phase of glycolysis is

- (a) Exothermic
- (b) Endothermic
- (c) Both A and B
- (d) Xerothermic
- (e) None of the above

S32. Ans. (b)

Sol.

- The **first phase of glycolysis** is traditionally called the **energy-investment or preparatory phase** and is considered **endergonic/endothermic in the simplified classification used in basic plant physiology**. Therefore, **option (b)** is the expected answer.
- During this phase, the cell invests energy in the form of ATP to activate glucose and its intermediates.
- This investment prepares the six-carbon sugar for subsequent cleavage into smaller molecules.
- The first phase therefore consumes cellular energy before the later payoff phase generates ATP and reducing equivalents.
- The second phase is commonly called the **energy-yielding or payoff phase**.

Information Booster:

- Glycolysis occurs in the **cytoplasm/cytosol**.
- It involves the conversion of glucose into **pyruvate**.
- The pathway has two broad stages: **energy investment** and **energy payoff**.
- ATP is consumed during the initial investment stage.
- Later reactions generate ATP and NADH.

Why Other Options are Incorrect:

(a) Exothermic

- The first phase requires an energy investment and is not conventionally described as exothermic in the basic classification used here.

(b) Endothermic

- Correct according to the conventional two-phase description used in plant physiology textbooks.

(c) Both A and B

- The question asks for the characteristic classification of the first phase; it is not classified as both in this context.

(d) Xerothermic

- Xerothermic refers to a condition involving **dryness and heat** and has no relevance to glycolysis.

(e) None of the above

- Incorrect because the expected classification is **endothermic/energy-investment phase**.

Q33. Factor-product relationship is related to

- (a) Principle of equal marginal returns
- (b) Principle of substitution
- (c) Principle of diminishing returns
- (d) Principle of opportunity cost
- (e) None of the above

S33. Ans. (c)

Sol.

- The **factor-product relationship** describes the relationship between the quantity of a variable input or factor and the resulting level of output. It is fundamentally associated with the **law/principle of diminishing returns**. Therefore, **option (c)** is correct.
- In agricultural production, a farmer may increase the quantity of one variable input while keeping other production factors constant.
- Initially, additional units of the variable factor may cause output to increase at an increasing rate.
- After a certain point, additional units continue to increase total output but at a **diminishing rate**.
- If the variable factor is increased excessively, total product may eventually decline.
- This relationship forms the basis for identifying the **three stages of production** and determining economically rational input use.

Information Booster:

- **Factor-product relationship:** Relationship between one variable input and output.

- It is represented through **Total Product (TP), Average Product (AP), and Marginal Product (MP)**.
- Production is commonly divided into **three stages**.
- The economically rational stage of production is generally **Stage II**, where marginal product is positive but diminishing.
- The relationship is central to **farm management and production economics**.

Why Other Options are Incorrect:

(a) Principle of equal marginal returns

- This is associated with allocating a limited resource among competing uses so that returns from the resource are equalized at the margin.

(b) Principle of substitution

- This concerns substitution between inputs or production factors while considering relative productivity and costs.

(c) Principle of diminishing returns

- Correct. Factor-product analysis is fundamentally based on the response of output to successive additions of a variable factor.

(d) Principle of opportunity cost

- Opportunity cost concerns the value of the next-best alternative forgone when a resource is used for a particular purpose.

(e) None of the above

- Incorrect because the factor-product relationship is directly associated with the **principle of diminishing returns**.

34. Which of the following soil is known as regur soil?

- ✓ **A) Black soil**
- B) Red soil
- C) Alluvial soil
- D) Forest soil
- E) None of the above

Correct Answer: A) Black soil

Detailed Explanation:

Regur soil is another name for Black Cotton Soil, found mainly in the Deccan Plateau (Maharashtra, Madhya Pradesh, Gujarat). It is derived from Deccan trap (basalt) rock, is rich in clay, calcium, magnesium and iron, and has high moisture-retention capacity, making it ideal for cotton cultivation.

Why the other options are incorrect:

- B)** Red soil gets its colour from iron oxide and is found in low-rainfall areas of the peninsula; it is not called regur soil.
- C)** Alluvial soil is deposited by rivers in the Indo-Gangetic plains; it is fertile but unrelated to the term 'regur'.
- D)** Forest soil forms under forest cover with high humus content; it has no connection to the term regur.
- E)** Incorrect, since option A correctly identifies regur soil as black soil.

35. Harvest index =

- A) Economic yield / Total area $\times 100$
- B) Total area / Biological yield $\times 100$
- ✓ C) Economical yield / Biological yield $\times 100$**
- D) All of the above
- E) None of the above

Correct Answer: C) Economical yield / Biological yield $\times 100$

Detailed Explanation:

Harvest Index (HI) is the ratio of economic yield (grain/marketable produce) to biological yield (total dry matter produced, including straw/stover) expressed as a percentage. $HI = (\text{Economic Yield} / \text{Biological Yield}) \times 100$. It indicates the efficiency of a crop in converting total biomass into harvestable produce.

Why the other options are incorrect:

- A)** This formula does not represent harvest index; dividing yield by area gives yield per unit area, not harvest index.
- B)** This is not a meaningful agronomic ratio and does not define harvest index.
- D)** Incorrect because only option C correctly defines harvest index; the other formulas are invalid.
- E)** Incorrect, since option C gives the correct formula.

36. In which irrigation method, intermittent application of water to the field surface under gravity flow which results in a series of on and off modes of constant or variable time spans?

- ✓ A) Surge irrigation**

- B) Ring basin method
- C) Cablegation
- D) All of the above
- E) None of the above

Correct Answer: A) Surge irrigation

Detailed Explanation:

Surge irrigation is a surface irrigation technique in which water is applied intermittently to furrows/borders in a series of on-and-off pulses (surges) instead of continuous flow. This improves the uniformity of water advance and increases irrigation efficiency compared to continuous flow irrigation.

Why the other options are incorrect:

- B) Ring basin (or basin) irrigation involves flooding a bounded basin around trees continuously; it is not characterised by on/off pulsed flow.
- C) Cablegation uses a moving plug controlled by a cable in a gated pipe to sequentially irrigate furrows, which is a different mechanism from pulsed on/off surface flow.
- D) Incorrect, as only surge irrigation matches the described on/off pulse pattern.
- E) Incorrect, since surge irrigation correctly matches the description.

37. Which of the following is scientific name of foxtail millet?

- ✓ A) *Setaria italica*
- B) *Echinochloa frumentacea*
- C) *Panicum miliaceum*
- D) *Paspalum scrobiculatum*
- E) None of the above

Correct Answer: A) *Setaria italica*

Detailed Explanation:

Foxtail millet's botanical name is *Setaria italica*. It is one of the oldest cultivated millets, grown widely in Asia for food and fodder.

Why the other options are incorrect:

- B) This is the scientific name of barnyard millet (sawan/sanwa), not foxtail millet.
- C) This is the scientific name of proso millet (common millet/cheena), not foxtail millet.
- D) This is the scientific name of kodo millet, not foxtail millet.
- E) Incorrect, since option A is correct.

38. How does Bt kills insect?

- A) Delta endotoxins rapidly paralyze the insect nervous system

B) Delta endotoxins rapidly paralyze the insect respiratory system

✓ C) Delta endotoxins rapidly paralyze the insect digestive system

D) Delta endotoxins rapidly paralyze the insect reproductive system

E) None of the above

Correct Answer: C) Delta endotoxins rapidly paralyze the insect digestive system

Detailed Explanation:

Bt (*Bacillus thuringiensis*) produces crystal (Cry) delta-endotoxin proteins. When ingested by a susceptible insect, these toxins bind to specific receptors on the midgut (digestive tract) epithelial cells, causing the gut to become paralyzed, pores/lesions to form, gut contents to leak into the body cavity, leading to septicemia and death of the insect.

Why the other options are incorrect:

A) Bt toxins act on the gut lining, not directly on the nervous system.

B) Insects do not die from a respiratory-system attack by Bt toxin; the target is the digestive tract.

D) Bt toxin action is not related to the reproductive system.

E) Incorrect, since option C correctly explains the mode of action

39. Father of method demonstration is

A) Rabindranath Tagore

B) Daniel Benor

✓ C) Dr. Seeman A. Knapp

D) Auguste Comte

E) None of the above

Correct Answer: C) Dr. Seeman A. Knapp

Detailed Explanation:

Dr. Seaman A. Knapp, an American agricultural scientist, pioneered the 'method demonstration' approach in the early 1900s (Farmer Cooperative Demonstration Work in Texas), which became the foundation of modern agricultural extension teaching methods. He is therefore known as the Father of Method Demonstration (and often called the Father of Agricultural Extension in the USA).

Why the other options are incorrect:

A) Tagore contributed to rural reconstruction work in India (Sriniketan) but is not credited as the father of method demonstration.

B) Daniel Benor is credited with developing the Training and Visit (T&V) extension system, not method demonstration.

D) Auguste Comte was a philosopher known as the father of sociology/positivism, unrelated to agricultural extension.

E) Incorrect, since option C is correct.

40. Papain is prepared from dried latex of

✓ A) Unripe Papaya

B) Unripe Banana

C) Unripe Coconut

D) Unripe Mango

E) None of the above

Correct Answer: A) Unripe Papaya

Detailed Explanation:

Papain, a proteolytic enzyme used in food processing, pharmaceuticals and cosmetics, is extracted by tapping/collecting and drying the milky latex obtained from the skin of unripe (green) papaya fruit (*Carica papaya*).

Why the other options are incorrect:

B) Banana does not yield the latex from which papain is prepared.

C) Coconut is not a source of latex-derived papain.

D) Mango does not produce the type of latex used to obtain papain.

E) Incorrect, since papaya (option A) is the correct source.

41. The process of breaking, scratching, mechanically altering or softening the seed coats to make them permeable to water and gases is known as

✓ A) Scarification

B) Leaching

C) Hardening

D) Priming

E) None of the above

Correct Answer: A) Scarification

Detailed Explanation:

Scarification is a seed treatment in which the hard seed coat is physically or chemically abraded, scratched, nicked or softened so that it becomes permeable to water and oxygen, thereby breaking seed-coat-imposed dormancy and improving germination.

Why the other options are incorrect:

B) Leaching refers to washing out water-soluble germination inhibitors from seeds/soil using water, not mechanical coat alteration.

- C) Seed hardening is a pre-sowing treatment (alternate wetting and drying) to induce drought tolerance, not coat scratching.
- D) Seed priming is a controlled hydration technique to synchronize germination, distinct from mechanically altering the seed coat.
- E) Incorrect, since scarification (option A) correctly matches the description.

42. Little leaf/curling of cotton is due to deficiency of

- ✓ A) Zn deficiency
- B) Mn deficiency
- C) Mg deficiency
- D) B deficiency
- E) None of the above

Correct Answer: A) Zn deficiency

Detailed Explanation:

Zinc (Zn) deficiency in cotton causes 'little leaf' disease, characterised by small, narrow, mottled leaves, shortened internodes and stunted growth, because zinc is essential for auxin (IAA) synthesis needed for normal leaf expansion.

Why the other options are incorrect:

- B) Manganese deficiency causes interveinal chlorosis, not the little-leaf symptom.
- C) Magnesium deficiency causes interveinal chlorosis of older leaves (needed for chlorophyll), not little leaf.
- D) Boron deficiency affects flower/boll formation and causes cracking of petioles, not little leaf symptoms.
- E) Incorrect, since zinc deficiency (option A) is the established cause.

43. Which of the following is the universal soil loss equation?

- A) $A = KLCP$
- B) $A = SCP$
- ✓ C) $A = RKLSCP$
- D) $A = LSP$
- E) None of the above

Correct Answer: C) $A = RKLSCP$

Detailed Explanation:

The Universal Soil Loss Equation (USLE) is $A = R \times K \times L \times S \times C \times P$, where R = rainfall erosivity, K = soil erodibility, L = slope length, S = slope steepness, C = cover management, and P = support practice factor. Only option C includes all six factors.

Why the other options are incorrect:

- A) This omits the rainfall erosivity (R) and slope steepness (S) factors, so it is incomplete.
- B) This omits R, K and L factors and is not the USLE.
- D) This omits R, K and C factors and is not the USLE.
- E) Incorrect, since option C correctly represents USLE.

44. Which of the following horizons form solum?

- A) A, B and C horizons
- B) A and C horizons
- ✓ C) A and B horizons
- D) All of the above
- E) None of the above

Correct Answer: C) A and B horizons

Detailed Explanation:

The 'solum' refers to the true soil formed by pedogenic (soil-forming) processes, comprising only the A horizon (topsoil, zone of eluviation) and the B horizon (subsoil, zone of illuviation). The C horizon is unconsolidated parent material and is not considered part of the solum.

Why the other options are incorrect:

- A) This wrongly includes the C horizon, which is parent material, not part of the true soil (solum).
- B) This wrongly excludes the B horizon, which is very much a part of the solum.
- D) Incorrect, since only option C correctly defines the solum.
- E) Incorrect, since option C is correct.

45. Golden yellow tag denotes:

- A) Certified seed
- B) Registered seed
- ✓ C) Breeder seed
- D) Foundation seed
- E) None of the above

Correct Answer: C) Breeder seed

Detailed Explanation:

In the Indian seed certification system, seed classes are identified by coloured tags: Breeder Seed – Golden Yellow tag, Foundation Seed – White tag, Registered Seed – Purple tag, Certified Seed – Blue tag. Hence, golden yellow denotes breeder seed, the nucleus/most genetically pure seed class produced directly by the breeder.

Why the other options are incorrect:

- A) Certified seed is identified by a blue tag, not golden yellow.
- B) Registered seed is identified by a purple tag, not golden yellow.
- D) Foundation seed is identified by a white tag, not golden yellow.
- E) Incorrect, since option C correctly identifies breeder seed.

46. Which of the following is noble cane?

- A) Beta vulgaris
- B) Saccharum barberi
- ✓ C) **Saccharum officinarum**
- D) Saccharum sinense
- E) None of the above

Correct Answer: C) Saccharum officinarum

Detailed Explanation:

Saccharum officinarum is known as 'noble cane'. It is a thick-stemmed, high-sucrose sugarcane species native to tropical regions such as New Guinea, valued for its juicy, sweet stalks, and used extensively in sugarcane breeding programmes.

Why the other options are incorrect:

- A) This is sugar beet, a different crop altogether used for sugar production from roots, not a sugarcane species.
- B) This is a thin, fibrous North Indian sugarcane species (used for jaggery) but not termed 'noble cane'.
- D) This is a Chinese sugarcane species, hardy but with lower sucrose content, not called 'noble cane'.
- E) Incorrect, since option C is correct.

47. Process of removal of constituents in suspension or solution by the percolating water from the upper layers to lower layers is known as

- ✓ A) **Eluviation**
- B) Horizonation
- C) Illuviation
- D) Humification
- E) None of the above

Correct Answer: A) Eluviation

Detailed Explanation:

Eluviation is the downward movement/removal of dissolved or suspended soil material (clay, minerals, organic matter) out of the upper soil horizons by percolating water, leaving the upper horizon (usually the A horizon) depleted of these materials.

Why the other options are incorrect:

- B)** Horizonation refers to the general formation of distinct soil horizons, not specifically the removal process described.
- C)** Illuviation is the opposite process — the deposition/accumulation of material in a lower horizon (typically the B horizon).
- D)** Humification is the decomposition of organic matter into humus, unrelated to water percolation removal of materials.
- E)** Incorrect, since option A correctly matches the description.

48. Purple tag denotes

- ✓ A) Registered seed**
- B) Certified seed
- C) Breeder seed
- D) Foundation seed
- E) None of the above

Correct Answer: A) Registered seed

Detailed Explanation:

As per the Indian seed certification tag colour scheme, the purple tag is issued for Registered Seed, which is the seed class produced from foundation seed and is one generation prior to certified seed.

Why the other options are incorrect:

- B)** Certified seed carries a blue tag, not purple.
- C)** Breeder seed carries a golden yellow tag, not purple.
- D)** Foundation seed carries a white tag, not purple.
- E)** Incorrect, since option A is correct.

49. Which of the following is known as wonder crop or yellow jewel?

- A) Chickpea
- ✓ B) Soybean**
- C) Cowpea
- D) Pigeon pea
- E) None of the above

Correct Answer: B) Soybean

Detailed Explanation:

Soybean (*Glycine max*) is called the 'wonder crop', 'golden bean' or 'yellow jewel' because of its exceptionally high protein (~40%) and oil (~20%) content combined with its ability to fix atmospheric nitrogen, making it highly valuable for food, feed and industrial uses.

Why the other options are incorrect:

- A) Chickpea (gram) is an important pulse crop but is not given the title 'wonder crop' or 'yellow jewel'.
- C) Cowpea (*lobia*) is a fodder/pulse legume, not known by these titles.
- D) Pigeon pea (*tur/arhar*) is a major pulse crop but does not carry this title.
- E) Incorrect, since soybean (option B) is correct.

50. Zing terracing is practiced on steep sloping ranging from

- A) 16 to 33%
- B) 10 to 15%
- C) More than 33%
- ✓ D) 3 to 10%
- E) None of the above

Correct Answer: (D) 3 to 10%

Detailed Solution:

Zing terracing is a traditional soil and water conservation practice used mainly in the cold arid regions of **Ladakh**. It is designed to conserve moisture, reduce runoff, and prevent soil erosion on gently sloping lands.

This method is suitable for **gentle slopes ranging from 3% to 10%**. Small embankments or terraces are constructed across the slope to intercept runoff and allow water to infiltrate into the soil, thereby improving moisture availability for crops.

Hence, **Zing terracing is recommended for slopes of 3–10%.**

Why the other options are incorrect:

- **16 to 33%** – These steeper slopes generally require **bench terracing**, not Zing terracing.
- **10 to 15%** – This slope range is higher than the recommended limit for Zing terracing and is more suitable for graded bunds or other conservation structures.
- **More than 33%** – Very steep slopes require intensive measures such as bench terracing or afforestation, not Zing terracing.
- **None of the above** – Incorrect because **3–10%** is the correct slope range.

51. Which of the following law states that alleles segregate from each other during formation and passed on to two different gametes in equal number?

- A) Law of independent assortment
- B) Law of diminishing returns
- ✓ C) Law of segregation
- D) Both A) and C)
- E) None of the above

Correct Answer: C) Law of segregation

Detailed Explanation:

Mendel's Law of Segregation (First Law) states that during gamete formation, the two alleles of a gene pair separate (segregate) from each other so that each gamete receives only one allele, and the two types of gametes are formed in equal proportions.

Why the other options are incorrect:

- A) This (Mendel's Second Law) deals with genes on different chromosome pairs assorting independently of each other, not the segregation of a single allele pair.
- B) This is an economics/agronomy principle about decreasing marginal output, unrelated to genetics.
- D) Incorrect, because independent assortment concerns multiple gene pairs, whereas the statement specifically describes segregation of a single allele pair.
- E) Incorrect, since option C correctly identifies the law.

52. Epigeal germination is seen in

- A) Tamarind
- B) Sunflower
- C) Mustard
- ✓ D) All of the above
- E) None of the above

Correct Answer: D) All of the above

Detailed Explanation:

In epigeal germination, the hypocotyl elongates and pushes the cotyledons above the soil surface. Sunflower and mustard are classic examples of epigeal germination, and tamarind is also generally classed with epigeal germinators, so 'All of the above' is taken as the intended answer as per the answer key convention.

Why the other options are incorrect:

- A) Correct individually, but incomplete since sunflower and mustard also show epigeal germination.

- B) Correct individually, but incomplete since tamarind and mustard also show epigeal germination.
- C) Correct individually, but incomplete since tamarind and sunflower also show epigeal germination.
- E) Incorrect, since all three listed crops exhibit epigeal germination.

53. Which of the following is the example of group contact method?

- ✓ A) Workshops
- B) Television
- C) Posters
- D) Journal
- E) None of the above

Correct Answer: A) Workshops

Detailed Explanation:

Extension teaching methods are classified as individual, group, and mass contact methods. Workshops (along with meetings, demonstrations, field trips, group discussions) involve direct interaction with a group of people and are therefore classed as group contact methods.

Why the other options are incorrect:

- B) Television is a mass contact method, reaching a large, undefined audience simultaneously.
- C) Posters are a mass contact (or written) method, not requiring direct group interaction.
- D) A journal/newspaper is a mass contact method used to reach wide, dispersed audiences.
- E) Incorrect, since option A is correct.

54. Which of the following is not the principle of extension education?

- A) Principle of cultural difference
- B) Principle of adaptability
- C) Principle of participation
- ✓ D) Principle of non-interest and need
- E) None of the above

Correct Answer: D) Principle of non-interest and need

Detailed Explanation:

The recognised principles of extension education include cultural difference, adaptability, participation, and interest & need (i.e., extension work must be based on the felt interests and needs of people), among others. 'Non-interest and need' is not a valid or recognised principle — the correct principle is precisely the opposite, i.e., 'interest and need'.

Why the other options are incorrect:

- A) This is a genuine, recognised principle of extension education, so it is not the answer.
 B) This is a genuine, recognised principle of extension education, so it is not the answer.
 C) This is a genuine, recognised principle of extension education, so it is not the answer.
 E) Incorrect, since option D correctly identifies the invalid principle.

55. Phenotypic ratio of monocross (monohybrid) hybrid is:

- A) 1 : 2 : 1
 ✓ B) 3 : 1
 C) 9 : 3 : 3 : 1
 D) Both A) and B)
 E) None of the above

Correct Answer: (B) 3 : 1

Detailed Solution:

A **monohybrid cross** involves the inheritance of **one pair of contrasting characters**. When two heterozygous individuals ($Aa \times Aa$) are crossed, the offspring are produced according to **Mendel's Law of Segregation**.

Punnett Square:

	A	a
A	AA	Aa
a	Aa	aa

Genotypic Ratio:

- 1 AA: 2 Aa: 1 aa

Phenotypic Ratio:

If A is dominant over a:

- AA → Dominant phenotype
- Aa → Dominant phenotype
- aa → Recessive phenotype

Therefore, the **phenotypic ratio** is:

3 Dominant: 1 Recessive (3: 1)

This classic **3:1 ratio** was first observed by **Gregor Johann Mendel** in his pea plant experiments and is obtained in the **F₂ generation** of a monohybrid cross under complete dominance.

Why the other options are incorrect:

- (A) 1: 2: 1 – This is the **genotypic ratio**, not the phenotypic ratio.

- (C) 9: 3: 3: 1 – This is the **phenotypic ratio of a dihybrid cross**, involving two traits.
- (D) Both A) and B) – Incorrect because only 3: 1 is the phenotypic ratio.
- (E) None of the above – Incorrect because 3: 1 is the correct answer.

56. Which crops are suitable for Rhizobium culture treatment?

- A) Cereals
- ✓ B) Pulses
- C) Both A) and B)
- D) Fibre crops
- E) None of the above

Correct Answer: B) Pulses

Detailed Explanation:

Rhizobium is a symbiotic, nitrogen-fixing bacterium that forms root nodules specifically on leguminous crops (pulses such as gram, pea, groundnut, soybean, lentil), converting atmospheric nitrogen into a plant-usable form. It is therefore used as a biofertilizer/seed treatment for pulse (legume) crops.

Why the other options are incorrect:

- A) Cereals (wheat, rice, maize) are non-leguminous and do not form root nodules with Rhizobium; they instead respond to Azotobacter/Azospirillum.
- C) Incorrect, since Rhizobium is effective only on leguminous pulse crops, not on cereals.
- D) Fibre crops such as cotton and jute are non-leguminous and do not respond to Rhizobium inoculation.
- E) Incorrect, since option B is correct.

57. The portion which is actually brought to the market at a particular time for sale is known as

- A) Marketable surplus
- ✓ B) Marketed surplus
- C) Both A) and B)
- D) Consumer surplus
- E) None of the above

Correct Answer: B) Marketed surplus

Detailed Explanation:

Marketed surplus is the quantity of produce that a farmer actually sells in the market at a given time, irrespective of his retention needs. It differs from marketable surplus, which is the

theoretical quantity left after meeting the farmer's family consumption, farm needs, wages-in-kind, etc. — marketable surplus may or may not be entirely sold.

Why the other options are incorrect:

- A) This is the surplus available/left for sale after meeting the farmer's own requirements — it represents potential, not the quantity actually sold.
- C) Incorrect, because the definition given (actually brought to market for sale) specifically corresponds to marketed surplus, not both terms.
- D) Consumer surplus is an economic concept referring to the difference between what a consumer is willing to pay and what they actually pay; unrelated to farm produce sale quantity.
- E) Incorrect, since option B is correct.

58. Training and Visit programme was first started by

- A) Rabindranath Tagore
- ✓ B) Daniel Benor
- C) Dr. Seeman A. Knapp
- D) Auguste Comte
- E) None of the above

Correct Answer: B) Daniel Benor

Detailed Explanation:

The Training and Visit (T&V) extension management system was developed and promoted by Daniel Benor (of the World Bank) in the 1970s, and was subsequently adopted in India and several developing countries to strengthen agricultural extension delivery.

Why the other options are incorrect:

- A) Tagore is associated with rural reconstruction at Sriniketan, not the T&V system.
- C) Dr. Knapp is credited with pioneering method demonstration, not the T&V system.
- D) Auguste Comte was a sociologist/philosopher unconnected with agricultural extension systems.
- E) Incorrect, since option B is correct.

59. Which of the following demonstration gives only skill?

- ✓ A) Method demonstration
- B) Composite demonstration
- C) Result demonstration
- D) National demonstration
- E) None of the above

Correct Answer: A) Method demonstration

Detailed Explanation:

Method demonstration is used specifically to teach a skill or technique (e.g., how to graft a plant, how to apply a pesticide) — it shows farmers 'how to do' something, imparting a skill, unlike result demonstration, which shows the value/result of adopting a whole new practice.

Why the other options are incorrect:

B) A composite demonstration combines multiple practices/technologies together to show an overall improved package, not a single skill.

C) Result demonstration is conducted on a farmer's field to prove the superiority/result of a new practice compared to the old one, focusing on outcome rather than skill alone.

D) National demonstrations are large-scale, high-input front-line demonstrations to showcase the yield potential of new technology, not focused solely on skill.

E) Incorrect, since option A is correct.

60. Capability of an isolated single cell to multiply and differentiate into a multicellular organism is known as

✓ **A) Totipotency**

B) Culture

C) Differentiation

D) Micropropagation

E) None of the above

Correct Answer: A) Totipotency

Detailed Explanation:

Totipotency is the inherent genetic capability of a single plant cell to divide and differentiate into an entire, complete multicellular organism, given suitable conditions. This principle is the biological basis of plant tissue culture.

Why the other options are incorrect:

B) Culture (tissue culture) is the technique/process used to grow cells in vitro; it is not the innate capability itself.

C) Differentiation is the process by which a cell becomes specialised for a specific function; it is a component of, but not synonymous with, totipotency.

D) Micropropagation is the practical application (mass multiplication of plants) that relies on totipotency, not the capability itself.

E) Incorrect, since option A is correct.

61. Scientific name of two humped camel is called

- A) Camelus pacos
- B) Camelus dromedaries
- ✓ C) **Camelus bactrianus**
- D) Camelus glama
- E) None of the above

Correct Answer: C) Camelus bactrianus

Detailed Explanation:

The two-humped (Bactrian) camel's scientific name is *Camelus bactrianus*. It is native to the cold steppes of Central Asia, distinct from the single-humped dromedary camel.

Why the other options are incorrect:

- A) This is actually the scientific name of the alpaca, not a camel species.
- B) This refers to the single-humped (Arabian/dromedary) camel, not the two-humped camel.
- D) This is the scientific name of the llama, not a camel species.
- E) Incorrect, since option C is correct.

62. Which of the following belongs to Audio-visual aids?

- ✓ A) **Puppet**
- B) Tape recorder
- C) Radio
- D) Flash cards
- E) None of the above

Correct Answer: A) Puppet

Detailed Explanation:

Audio-visual aids engage both hearing and sight simultaneously. A puppet show combines visual action/movement of puppets with spoken dialogue/sound, making it an audio-visual aid, whereas the other options fall into single-sense categories.

Why the other options are incorrect:

- B) A tape recorder is a purely audio aid (sound only, no visual element).
- C) Radio is a purely audio (mass) aid with no visual component.
- D) Flash cards are a purely visual aid with no audio component.
- E) Incorrect, since option A is correct.

63. Farmers having area less than one hectare of unirrigated land are known as

- A) Large farmers

✓ B) Marginal farmers

C) Small farmers

D) Agriculture labours

E) None of the above

Correct Answer: B) Marginal farmers

Detailed Explanation:

As per the standard Indian land-holding classification, farmers owning/operating less than 1 hectare of unirrigated (or its equivalent) land are classified as marginal farmers. Small farmers, in contrast, hold between 1 and 2 hectares.

Why the other options are incorrect:

A) Large farmers hold significantly more than 2 hectares (often 10 hectares or more), not less than 1 hectare.

C) Small farmers are defined as holding between 1 and 2 hectares of unirrigated land, above the marginal category.

D) Agricultural labourers work on farms for wages and typically do not own/operate land at all, so this category is unrelated to land-size classification.

E) Incorrect, since option B is correct.

64. Minimum Support Price (MSP) of groundnut for Kharif Marketing Season (KMS) 2025-2026 is (in ₹/quintal)

A) 8768

B) 6200

✓ C) 7263

D) 11582

E) None of the above

Correct Answer: C) 7263

Detailed Explanation:

For the Kharif Marketing Season 2025-26, the Government of India (CCEA) raised the MSP of groundnut by about 7.1% to ₹7,263 per quintal (up from ₹6,783 in the previous season). This was part of the wider Kharif MSP hike announced in May 2025.

Why the other options are incorrect:

A) ₹8,768 per quintal is the 2025-26 MSP fixed for moong (green gram), not groundnut.

B) ₹6,200 per quintal was closer to an earlier season's groundnut MSP level, not the 2025-26 figure.

D) ₹11,582 per quintal does not correspond to groundnut's MSP for any recent season and is a distractor figure.

E) Incorrect, since option C (₹7,263) is the correct, government-notified figure.

65. International Crop Research Institute for the Semi-Arid Tropics (ICRISAT) is located at

- ✓ A) Hyderabad
- B) New Delhi
- C) Lucknow
- D) Chennai
- E) None of the above

Correct Answer: A) Hyderabad

Detailed Explanation:

ICRISAT's global headquarters is located at Patancheru, near Hyderabad, Telangana, India. It conducts research on dryland/semi-arid crops such as sorghum, pearl millet, chickpea, pigeon pea and groundnut.

Why the other options are incorrect:

- B) New Delhi hosts many national agricultural bodies (e.g., ICAR headquarters) but not ICRISAT.
- C) Lucknow hosts institutes like CDRI and CIMAP, not ICRISAT.
- D) Chennai is not the location of ICRISAT's headquarters.
- E) Incorrect, since option A is correct.

Q. No. Correct Answer

- 81 D – Maintaining land ownership and revenue records of farmers
- 82 D – 6 months
- 83 A – 1977
- 84 B – Churk and Dalla
- 85 D – 21 years
- 86 A – Ganga-Yamuna Doab and Delhi Ridge Region
- 87 C – Sonbhadra

**Test
Prime**

By Adda247

PREVIOUS YEAR PAPERS PDF



PRACTICE MORE, SCORE HIGHER!



**Free
25,000+
PDF's**

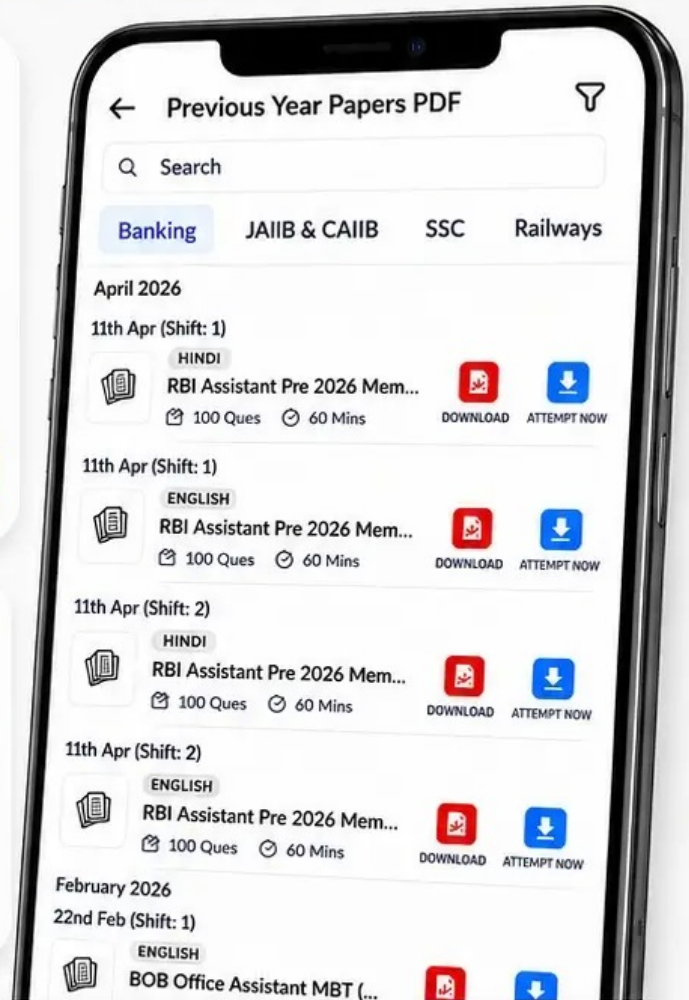
High-Quality | Exam-Wise | Updated Regularly



**ATTEMPT AS
MOCK**



Turn PDFs into real exam experience.
Analyze. Improve. Succeed.



Topic-wise &
Exam-wise PDFs



Download &
Study Offline



Attempt as Mock
& Track Score



Smart Analysis
& Performance

AVAILABLE IN



Banking



SSC



Railway



Teaching



UGC



Agriculture



Nursing



Bihar



UP



Punjab



WB



Odisha



TN



AP & Telangana



Haryana



DOWNLOAD TEST PRIME

Test

Prime



SUCCESS GALLERY!

★ MEET THE ACHIEVERS ★



Kunal, RRB JE



Shivam, UPSSSC AGTA



Priya, ANM



KHALILUR, LDA



Manoj, PWD



Atin, JENPAS



Shatarupa, OPSC



Arpita, JENPAS



Shital, SSC JE (Mech)



Nancy, UGC NET



Atul, SSC JE (ELCT)



Rahul, SSC JE (CIVIL)



Anand, SSC JE (ELCT)



Mohan, SSC JE (ELCT)



Saurabh, UGC NET



Ved, SSC JE (Mech)

★ THEY DID IT. YOU CAN TOO ★

READ THEIR STORIES!



Q. No. Correct Answer

- 88 **A** – Rosa Thermal Power Plant
- 89 **B** – Lalitpur
- 90 **B** – Mainpuri
- 91 **C** – Baghpat
- 92 **D** – 1986
- 93 **D** – 1976
- 94 **C** – Two members
- 95 **B** – Potash and lime
- 96 **B** – High permeability of coarse gravel and pebble deposits
- 97 **D** – Faulted Gondwana Basin
- 98 **C** – Sonbhadra and Mirzapur
- 99 **D** – Sandy elevated tracts occurring along river banks
- 100 **C** – Agra, Awadh and Allahabad