Rajasthan JET Agriculture Sample Paper-2

Duration: 40 Minutes **Maximum Marks: 160**

Instructions

- This paper contains **40** Multiple Choice Questions (Single Correct).
- Each correct answer carries **+4 marks**.
- Each incorrect answer carries: **−1 marks**.
- Use of mobile phones, smartwatches, calculators, or any electronic gadgets is strictly prohibited.

Q1. The optimum wind speed for efficient operation of a standard wind mill used in modern micro-irrigation systems in arid regions of Western Rajasthan ranges between:

(A) 2 to 5 km/hr

(B) 12 to 16 km/hr

(C) 30 to 45 km/hr

(D) 50 to 65 km/hr

Q2. Which of the following plant growth regulators is highly recommended and commercially used for inducing uniform ripening and enhancing colour development in uniform bunches of grapes?

(A) Naphthalene Acetic Acid (NAA)

(B) Gibberellic Acid (GA_3)

(C) Ethrele / Ethylene

(D) Cytokinin (Kinetin)

Q3. Under the Kisan Credit Card (KCC) scheme, what is the maximum duration permitted for the repayment of short-term crop loans, calculated from the date of disbursement?

(A) 6 months

(B) 12 months

(C) 24 months

(D) 36 months

Q4. The deep, black clayey soils belonging to the order Vertisols are predominantly distributed in which agro-climatic zone of Rajasthan?

(A) Zone I-A (Arid Western Plain)

(B) Zone III-B (Flood Prone Eastern Plain)

(C) Zone V (Humid South Eastern Plain)

(D) Zone II-A (Transitional Plain of Inland Drainage)

Q5. Which breed of dual-purpose cattle, native to the dry regions of Karachi and Hyderabad, exhibits high heat tolerance and is characterized by a distinct loose skin (dewlap), with prominent bulls maintained well at the Central Cattle Breeding Farm in Suratgarh, Rajasthan?

(A) Rathi

(B) Tharparkar

(C) Sahiwal

(D) Gir

Q6. Which of the following is a structural functional exception in the composition of camel milk compared to indigenous cow milk?

(A) Camel milk is entirely devoid of Vitamin C

(B) Camel milk lacks the ability to form a distinct hard curd coagulum under standard rennet action

(C) Camel milk has double the percentage of short-chain saturated fatty acids

(D) Camel milk cannot be stored at room temperature for more than two hours

Q7. When the breeding population is completely self-pollinated for multiple generations, the progressive change in the genetic architecture of the crop line is characterized by a:

(A) Continuous increase in heterozygosity by 50

(B) Continuous increase in homozygosity by 50

(C) Reduction in both phenotypic and genotypic stability

(D) Total elimination of recessive lethal alleles within one generation

Q8. The bitter principle 'Momordicin' found in bitter gourd belongs to which class of biochemical compounds?

(A) Alkaloids

(B) Tetracyclic triterpines

(C) Cyanogenic glucosides

(D) Anthocyanins

Q9. The metabolic disorder 'Milk Fever' in high-yielding dairy animals during the early stage of lactation is primarily caused by a sudden, acute drop in the blood serum level of:

(A) Inorganic Phosphorus

(B) Ionic Calcium

(C) Blood Glucose

(D) Magnesium ions

Q10. What is the optimum temperature range required for the proper incubation of eggs from domestic poultry breeds (*Gallus domesticus*) to achieve maximum hatchability?

(A) 31.5 °C to 33.5 °C

(B) 37.2 °C to 37.8 °C

(C) 40.1 °C to 42.5 °C

(D) 25.0 °C to 28.5 °C

Q11. Which of the following organic manures has the narrowest Carbon to Nitrogen (C:N) ratio, leading to the fastest mineralization rate when applied to sandy loam soils?

(A) Farm Yard Manure (FYM)

(B) Groundnut cake

(C) Vermicompost

(D) Wheat straw residue

Q12. The disease 'Ranikhet' (Newcastle Disease) in poultry flocks is caused by which of the following biological agents?

(A) Pasteurella multocida

(B) Eimeria tenella

(C) Paramyxovirus-1

(D) Aspergillus fumigatus

Q13. Which of the following components is an essential constituent of a primary tillage implement designed for deep summer ploughing in hard-pan fields?

(A) Disc Harrow

(B) Moldboard Plough

(C) Cultivator tines

(D) Rotary tiller blades

Q14. The physiological disorder 'Internal Necrosis' in Aonla (*Emblica officinalis*) fruit orchards across Rajasthan is primarily induced due to the deficiency of which nutrient element?

(A) Zinc

(B) Boron

(C) Iron

(D) Copper

Q15. The absolute economic threshold life cycle phase for harvesting the medicinal crop Sanay (*Cassia angustifolia*) to obtain maximum sennoside content is during the:

(A) Seedling stage

(B) Active vegetative stage before flowering

(C) Full bloom and pod development stage

(D) Complete senescence stage

Q16. Under the operational guidelines of the national 'Operation Flood' programme, which tier of the dairy cooperative structure works directly at the village grass-root level to collect milk from individual farmers?

(A) State Dairy Federation

(B) District Cooperative Milk Producers' Union

(C) Primary Milk Producers' Cooperative Society

(D) National Dairy Development Board regional desk

Q17. The pre-emergence herbicide most commonly recommended for controlling complex weed flora in Pearl Millet (*Pennisetum glaucum*) under rainfed conditions is:

(A) Atrazine

(B) Isoproturon

(C) Glyphosate

(D) 2,4-D Ethyl Ester

Q18. Which commercial propagation method is now standard and highly successful for establishing commercial orchards of Ber (*Zizyphus mauritiana*) in hyper-arid zones of Bikaner and Jodhpur?

(A) Air layering

(B) T- or Shield Budding

(C) Ring Budding

(D) Hardwood stem cutting

Q19. What is the legal minimum fat and Solids-Not-Fat (SNF) percentage standard fixed for pure double toned milk distributed across commercial retail points?

(A) Fat: 4.5

(B) Fat: 3.0

(C) Fat: 1.5

(D) Fat: 0.5

Q20. The chemical compound added to commercial fruit squashes like mango squash as a chemical preservative to inhibit microbial growth is:

(A) Potassium metabisulphite (KMS)

(B) Sodium benzoate

(C) Citric acid anhydrous

(D) Calcium chloride

Q21. Which systematic crop rotation sequence is highly recommended for maintaining long-term soil health under rainfed farming in Western Rajasthan?

(A) Pearl millet – Wheat

(B) Cluster bean – Mustard

(C) Rice – Wheat

(D) Maize – Mustard

Q22. The critical active component present in the medicinal plant *Chlorophytum borivilianum* (Safed Musli) that imparts therapeutic properties is:

(A) Solasodine

(B) Sennoside

(C) Saponin

(D) Isothiocynate

Q23. For making high-quality silage, which group of crops is considered most suitable due to their high soluble carbohydrate reserves?

(A) Lucerne and Berseem

(B) Maize and Sorghum

(C) Cowpea and Cluster bean

(D) Mustard and Groundnut

Q24. To clear legal requirements for international trade and domestic packaging, what is the maximum permissible moisture percentage content allowed in certified crop seeds of cereal grains at the time of final storage packing?

(A) 8

(B) 12

(C) 16

(D) 20

Q25. The critical physiological disorder of cauliflower caused by an extreme trace level availability of the micronutrient Molybdenum (Mo) in highly acidic soils is known as:

(A) Browning

(B) Buttoning

(C) Whiptail

(D) Blindness

Q26. Which system of layout in establishing an orchard accommodates exactly fifteen percent more plants per unit area compared to the standard Square System?

(A) Rectangular System

(B) Hexagonal System

(C) Quincunx System

(D) Contour System

Q27. What is the exact scientific formula used to calculate the percentage of total digestible nutrients (TDN) to determine feed efficiency values?

(A) TDN = % Digestible Crude Protein + % Digestible Crude Fibre + % Digestible Nitrogen Free Extract + (% Digestible Ether Extract $\times$ 2.25)

(B) TDN = % Digestible Crude Protein + % Digestible Crude Fibre + % Digestible Nitrogen Free Extract + (% Digestible Ether Extract $\times$ 1.25)

(C) TDN = % Digestible Crude Protein + % Digestible Ash + % Digestible Nitrogen Free Extract

(D) TDN = % Digestible Crude Protein + (% Digestible Ether Extract $\times$ 2.25)

Q28. The highly destructive, contagious bacterial disease of livestock listed under elite biosecurity surveillance that causes high fever and a distinct crackling sound when the gluteal thigh muscles are pressed is:

(A) Hemorrhagic Septicemia

(B) Anthrax

(C) Black Quarter (BQ)

Q29. Which design of greenhouse or protective cultivation structure is most suitable for reducing scorching heat indices during high-radiation periods in Rajasthan's semi-arid districts?

(A) Lean-to type structure

(B) Even-span greenhouse

(C) Naturally ventilated shade-net house with silver-aluminized lining

(D) Rigid frame glasshouse

Q30. The process of deliberate removing of weak, diseased, or non-true-to-type crop plants from a seed production field to maintain structural genetic purity is technically termed as:

(A) Detasseling

(B) Roguing

(C) Topping

(D) Pruning

Q31. The most suitable species of honeybee widely domesticating and preferred for commercial apiaries across the mustard belts of Rajasthan due to its high honey yield and gentle temperament is:

(A) Apis dorsata

(B) Apis florea

(C) Apis mellifera

(D) Apis cerana indica

Q32. The specific systematic method of artificial selection where a large number of plants showing desirable phenotypic traits are selected, their seeds harvested and mixed together to grow the next generation is termed as:

(A) Pure line selection

(B) Mass selection

(C) Pedigree selection

(D) Recurrent selection

Q33. Which functional component of an automatic drip irrigation assembly serves the primary function of preventing dirt and sand grain particles from clogging the narrow emitter orifices?

(A) Venturi assembly

(B) Hydrocyclone sand separator followed by a Screen filter

(C) Pressure bypass valve

(D) Non-return check valve

Q34. Under the Pradhan Mantri Fasal Bima Yojana (PMFBY), what is the uniform premium rate percentage of the sum insured payable by the cultivating farmer for all commercial horticultural and spice crops?

(A) 1.5

(B) 2.0

(C) 5.0

(D) 10.0

Q35. The biological agent *Trichogramma chilonis* is extensively reared in laboratories and released in fields for the biological control of which destructive pest group?

(A) Sucking pests like aphids and jassids

(B) Root-knot nematodes

(C) Lepidopteran egg mass and early stage borers

(D) Subterranean termites

Q36. What is the optimum substrate, environmental moisture, and dark conditions required for growing the commercial white button mushroom (Agaricus bisporus) during its spawn running phase?

(A) Untreated fresh wooden logs with 20% relative humidity

(B) Sterilized synthetic compost with 65–70% moisture at 22–25 °C

(C) Raw river sand with continuous light exposure at 35 °C

(D) Acidic forest leaf litter with 100% standing water layer

Q37. The absolute density of pure fat in cow milk at standard 20 °C ambient thermal measurement is:

(A) 1.032 g/cm^3

(B) 0.930 g/cm^3

(C) 1.040 g/cm^3

(D) 0.850 g/cm^3

Q38. The critical physiological state of seed dormancy induced by a hard, impermeable seed coat preventing water absorption in agricultural crops can be effectively broken by which mechanical method?

(A) Scarification

(B) Stratification

(C) Vernalization

(D) Solarization

Q39. Which variety of Mandarins (Citrus reticulata) is grown on a massive commercial scale across the Jhalawar district of Rajasthan, earning it the title 'Nagpur of Rajasthan'?

(A) Kinnow

(B) Nagpur Santra

(C) Coorg Mandarin

(D) Khasi Mandarin

Q40. For the production of premium quality jelly, which of the following biochemical components must be present in high amounts within the selected fruit extract?

(A) High Free Sugar and low moisture

(B) High Pectin content and optimum Acid content

(C) High Crude Protein and Vitamin C

(D) High Starch content and Papain enzymes

Detailed Solutions

Q1.

Solution

Concept: Micro-irrigation installations (like drip or sprinkler systems) operating via renewable wind power in the hyper-arid terrains of Western Rajasthan require specific threshold velocities. Windmill pumps rely on aerodynamic lift and drag forces to actuate the mechanical piston or rotary drive responsible for groundwater extraction.

Solution:

(a) Windmills designed for agricultural water pumping require a minimum cut-in speed to overcome mechanical inertia and internal torque resistance.

(b) Very low velocities (2 to 5 km/hr) fail to generate the necessary aerodynamic lift to turn the multi-bladed rotor assembly against the water head.

(c) Conversely, hyper-velocity winds exceeding 30 km/hr often trigger automated furling mechanisms to protect the structural integrity of the mast and sails from structural failure.

(d) Empirical field assessments across arid zones like Jaisalmer and Bikaner confirm that sustained, moderate wind velocities ranging between 12 and 16 km/hr provide optimal torque for consistent fluid displacement.

(e) This velocity profile perfectly matches the typical afternoon wind regimes observed in desert ecosystems, maximizing overall volumetric discharge efficiency.

Final Answer: 12 to 16 km/hr.

Answer: (B)

Go Back to Question 1

Q2.

Solution

Concept: Fruit ripening and exogenous color modification are mediated by specific plant growth regulators (PGRs). In viticulture, matching the targeted physiological response with the appropriate gaseous or liquid hormonal application determines commercial berry quality and market premium.

Solution:

(a) Ethylene functions as the principal ripening hormone in plant systems, stimulating autocatalytic respiration, chlorophyll degradation, and anthocyanin synthesis.

(b) Ethrele (2-chloroethylphosphonic acid) releases gaseous ethylene directly into plant tissues upon metabolic breakdown, leading to uniform berry softening.

(c) While Gibberellic Acid (GA_3) is heavily utilized in viticulture, its primary roles are focused on cluster elongation, berry thinning, and seedless berry sizing rather than final coloration.

(d) Auxins like Naphthalene Acetic Acid (NAA) generally delay senescent phases and are used to prevent pre-harvest berry drop.

(e) Therefore, Ethrele remains the definitive commercial input chosen by growers to achieve synchronous ripening and deep color accumulation across grape bunches.

Final Answer: Ethrele / Ethylene.

Answer: (C)

Go Back to Question 2

Q3.

Solution

Concept: The Kisan Credit Card (KCC) scheme provides comprehensive credit support to farmers. The banking guidelines establish rigid operational parameters regarding credit limits, interest subventions, and maximum tenure metrics for short-term production credit.

Solution:

(a) Short-term crop loans disbursed under the KCC mechanism are explicitly structured to mirror the biological lifecycle of seasonal cropping patterns (Kharif and Rabi).

(b) The operational guidelines set by institutional financial systems stipulate a maximum repayment window of exactly 12 months for these short-term credits.

(c) This annual schedule aligns financial liquidation with the post-harvest marketing phases of the agricultural calendar.

(d) Failure to repay within this 12-month timeframe disqualifies the beneficiary from the 3

(e) Medium-term and long-term investment credits for machinery or land development carry extended maturities, but standard crop production capital remains strictly locked into an annual cycle.

Final Answer: 12 months.

Answer: (B)

Go Back to Question 3

Q4.

Solution

Concept: Soil taxonomy categorizes soils into distinct orders based on diagnostic horizons and physical characteristics. Identifying the geographical distribution of these orders across Rajasthan's agro-climatic zones is critical for regional crop planning.

Solution:

(a) Vertisols comprise typical deep, heavy clay soils characterized by a high percentage of swelling silicate clays like montmorillonite.

(b) These soils exhibit high shrink-swell potentials, developing deep vertical cracks during dry spells and becoming highly plastic and sticky upon hydration.

(c) Geographically, this soil order dominates the Hadoti plateau, which corresponds directly to Agro-climatic Zone V (Humid South Eastern Plain).

(d) In contrast, Zone I-A (Arid Western Plain) is dominated by sandy, poorly developed Aridisols and Entisols.

(e) The high water-retaining capacity of Vertisols in Zone V makes them highly suitable for intensive commercial production of crops like soybean, citrus, and cotton.

Final Answer: Zone V (Humid South Eastern Plain).

Answer: (C)

Go Back to Question 4

Q5.

Solution

Concept: Indigenous zebu cattle breeds (*Bos indicus*) possess distinctive anatomical and physiological adaptations tailored to severe environmental regimes. Evaluating breed profiles allows for proper selection in regional breeding programs.

Solution:

(a) The Tharparkar breed originates from the Tharparkar district of Pakistan, adapting over centuries to the continuous grazing and heat stress of desert ecosystems.

(b) Anatomically, it features a white or light grey coat that reflects solar radiation, alongside a well-developed dewlap that aids in thermoregulation.

(c) It serves as an exceptional dual-purpose animal, delivering dependable milk yields and providing draught-hardy bullocks for agricultural cultivation.

(d) To preserve and distribute these superior genetics, institutional systems maintain premium germplasm lines at the Central Cattle Breeding Farm in Suratgarh.

(e) While the Rathi and Sahiwal breeds are high-yielding milch cattle, they lack the specific morphological features and geographic adaptation history unique to Tharparkar.

Final Answer: Tharparkar.

Answer: (B)

Go Back to Question 5

Q6.

Solution

Concept: The biochemical profiles of milk vary across livestock species based on evolutionary adaptation. Evaluating these chemical variations is essential for understanding processing constraints and dairy manufacturing limitations.

Solution:

(a) Camel milk exhibits a unique protein structural profile, particularly regarding its casein micelle architecture and total κ-casein distribution.

(b) Due to this modified micellar setup, camel milk lacks the capacity to form a firm, cohesive curd matrix under the enzyme action of commercial rennet.

(c) This property makes standard cheese manufacturing difficult, requiring specialized technological modifications to induce coagulation.

(d) For nutritional context, camel milk actually contains significantly higher concentrations of Vitamin C compared to bovine options.

(e) Additionally, its low concentration of short-chain volatile fatty acids contributes to its long shelf-life and characteristic salty flavor profile.

Final Answer: Camel milk lacks the ability to form a distinct hard curd coagulum under standard rennet action.

Answer: (B)

Go Back to Question 6

Q7.

Solution

Concept: Continuous self-pollination dictates the genetic progression of plant populations over successive generations. This concept governs the development of homozygous inbred lines used in crop breeding programs.

Solution:

(a) With each consecutive generation of selfing, the frequency of heterozygous loci is reduced by exactly 50

(b) Concurrently, this genetic reduction leads to an equivalent 50

(c) The mathematical progression towards fixation follows the standard quantitative formula: $H_m = (\frac{1}{2})^m$, where m represents the total number of selfed generations.

(d) This continuous reduction separates the heterogeneous gene pool into distinct, true-breeding homozygous lines, securing phenotypic and genotypic uniformity.

(e) This systematic process concentrates both desirable and undesirable alleles, allowing breeders to eliminate deleterious recessive traits through rigid selection.

Final Answer: Continuous increase in homozygosity by 50% every generation.

Answer: (B)

Go Back to Question 7

Q8.

Solution

Concept: Secondary metabolites in horticultural crops generate unique flavors, aromas, and medicinal attributes. Identifying these specific bitter principles helps classify quality traits in olericulture.

Solution:

(a) Bitter gourd (*Momordica charantia*) contains a distinct bitter compound known as Momordicin, which belongs to the tetracyclic triterpines class.

(b) These bitter principles are chemically classified as oxygenated triterpenoid compounds derived from the isoprenoid metabolic pathway.

(c) These compounds serve as natural chemical defense mechanisms against herbivorous insects and pathogenic microorganisms.

(d) While alkaloids and cyanogenic glucosides are common defensive metabolites in plants, they do not account for the specific bitterness found in the Cucurbitaceae family.

(e) Isothermal and chromatographic analyses confirm that Momordicin and its associated charantin glycosides provide both the characteristic bitterness and the therapeutic, blood-glucose-lowering properties of the fruit.

Final Answer: Tetracyclic triterpines.

Answer: (B)

Go Back to Question 8

Q9.

Solution

Concept: Periparturient disorders in high-producing dairy cows stem from metabolic imbalances during the transition period. These conditions require rapid diagnosis and targeted therapeutic intervention.

Solution:

(a) Milk Fever (parturient paresis) is a metabolic disease that manifests close to calving due to the sudden drain of calcium into the colostrum.

(b) This rapid loss causes an acute, severe drop in ionic calcium levels in the blood serum, falling well below the normal 8–10 mg/dL threshold.

(c) This hypocalcemia disrupts neuromuscular transmission, leading to muscle weakness, structural recumbency, and eventual circulatory collapse.

(d) While drops in blood glucose cause ketosis, and phosphorus imbalances trigger post-parturient hemoglobinuria, they do not induce the classic paretic symptoms of Milk Fever.

(e) Administering intravenous calcium borogluconate quickly restores systemic calcium balance, reversing the neuromuscular block and stabilizing the animal.

Final Answer: Ionic Calcium.

Answer: (B)

Go Back to Question 9

Q10.

Solution

Concept: Artificial incubation requires strict regulation of physical environmental parameters to ensure successful embryonic development and high hatchability percentages in commercial poultry management.

Solution:

(a) The physiological development of the avian embryo inside fertilised eggs is highly sensitive to external thermal variations.

(b) The optimum temperature range for the complete 21-day incubation period of chicken eggs is narrowly fixed between 37.2 °C and 37.8 °C.

(c) Temperatures below this range slow cellular division, extending the incubation period and increasing embryonic mortality rates.

(d) Conversely, excessive heat exceeding 39 °C causes structural abnormalities, heat prostration, and early embryonic death.

(e) Maintaining this narrow thermal window, along with proper relative humidity and regular egg turning, ensures high hatchability in commercial operations.

Final Answer: 37.2 °C to 37.8 °C.

Answer: (B)

Go Back to Question 10

Q11.

Solution

Concept: The decomposition and nutrient release dynamics of organic manures applied to the soil are governed by their elemental composition. The Carbon to Nitrogen (C:N) ratio represents the primary index determining whether microbial activity causes net mineralization or temporary immobilization of nitrogen in the rhizosphere.

Solution:

(a) Organic substrates require microbial breakdown before plant roots can assimilate structural elements. When an input has a narrow C:N ratio, soil microorganisms encounter an abundance of nitrogen relative to carbon.

(b) This balanced nutritional profile means the microbes do not need to consume surrounding soil nitrogen stores to build their cellular biomass, which avoids local nutrient locking.

(c) Concentrated organic oil cakes, such as groundnut cake, contain high initial nitrogen fractions alongside relatively small carbohydrate structures, yielding a very narrow C:N ratio typically ranging between 4:1 and 7:1.

(d) Bulky organic manures like standard Farm Yard Manure or Vermicompost possess significantly wider structural ratios, often extending from 20:1 up to 30:1 due to their high fiber content.

(e) Consequently, groundnut cake undergoes rapid microbial breakdown, releasing large amounts of plant-available ammonium and nitrate ions into sandy loam soils shortly after application.

Final Answer: Groundnut cake.

Answer: (B)

Go Back to Question 11

Q12.

Solution

Concept: Etiological classification of infectious livestock and poultry diseases forms the basis of effective veterinary biosecurity and prophylactic health plans. Identifying the specific causative pathogen genus ensures correct clinical treatment protocols can be deployed.

Solution:

(a) Ranikhet disease, globally recognized as Newcastle Disease, is a highly contagious and lethal viral affliction impacting multi-age poultry operations.

(b) The underlying pathogen responsible for this systemic infection belongs to the Paramyxoviridae family, classified specifically as Avian Paramyxovirus-1.

(c) This viral pathogen targets the respiratory, neurological, and gastrointestinal tracts of fowl, causing high flock mortality, green diarrhea, and twisted necks.

(d) Other common avian pathogens include the bacterium Pasteurella multocida, which causes fowl cholera, and the protozoan Eimeria tenella, which causes cecal coccidiosis.

(e) Fungal pathogens like Aspergillus fumigatus cause brooder pneumonia, meaning viral therapeutic approaches are completely ineffective against those specific outbreaks.

Final Answer: Paramyxovirus-1.

Answer: (C)

Go Back to Question 12

Q13.

Solution

Concept: Agricultural implements are classified into primary and secondary categories based on the depth of soil disruption and their mechanical action. Primary tillage tools must exert high shear force to shatter compacted sub-surface hard pans.

Solution:

(a) Primary tillage operations aim to break open, invert, and loosen hard, compacted soil profiles during dry summer fallow periods.

(b) The Moldboard Plough features a curved steel surface that cuts through dense earth, lifts the furrow slice, and completely inverts the soil profile.

(c) This heavy-duty inversion action buries surface weeds, exposes deep-dwelling pests to solar radiation, and breaks up restrictive subterranean plow pans.

(d) Secondary tools like disc harrows, cultivators, and rotary tillers work at shallower depths to break up clods and level seedbeds.

(e) These secondary tools lack the heavy frame weight and structural strength needed to penetrate dry, compacted soils without breaking components.

Final Answer: Moldboard Plough.

Answer: (B)

Go Back to Question 13

Q14.

Solution

Concept: Nutritional disorders in horticultural crops result from localized microelement deficiencies that disrupt standard physiological pathways. These imbalances degrade the internal tissues of developing fruits, reducing their commercial market value.

Solution:

(a) Aonla trees are highly susceptible to localized microelement deficiencies when grown in the calcareous, high-pH soil profiles typical of semi-arid regions.

(b) Boron serves as a vital micro-nutrient responsible for maintaining cell wall structural integrity, regulating metabolic sugar translocation, and stabilizing membrane functions.

(c) When available soil boron levels drop below critical thresholds, internal fruit tissues experience localized metabolic starvation, leading to cellular collapse.

(d) This structural breakdown causes internal necrosis, turning the flesh near the seed brown and woody, which ruins the fruit for commercial processing.

(e) While zinc or iron deficiencies cause visible leaf chlorosis, they do not induce the localized tissue death characteristic of boron-induced internal necrosis.

Final Answer: Boron.

Answer: (B)

Go Back to Question 14

Q15.

Solution

Concept: The accumulation of secondary metabolites in medicinal crops varies throughout the plant's life cycle. Harvesting schedules must target the specific growth phase where these active therapeutic compounds reach peak concentration.

Solution:

(a) Sanay, or Senna, is cultivated across arid regions primarily for its leaves and pods, which contain therapeutic sennosides used in pharmaceuticals.

(b) Sennoside biosynthesis ramps up during vegetative growth, but biochemical tracking shows the compounds reach peak density during generative reproduction.

(c) The full bloom and concurrent pod development phase represents the physiological peak for sennoside accumulation within the foliage and pods.

(d) Harvesting too early during the young seedling or vegetative stages yields low total dry matter mass and poor chemical potency.

(e) Conversely, delaying harvest until complete leaf senescence triggers active chemical degradation, significantly reducing the market value of the raw material.

Final Answer: Full bloom and pod development stage.

Answer: (C)

Go Back to Question 15

Q16.

Solution

Concept: The Anand pattern dairy cooperative design operates on a three-tier structural model. This decentralized framework ensures smallholder rural livestock producers gain direct, transparent access to larger urban consumer markets.

Solution:

(a) The national Operation Flood initiative established organized procurement channels by dividing responsibilities across three distinct administrative levels.

(b) The Primary Milk Producers Cooperative Society forms the foundation of this system, operating directly at the village level.

(c) This village outpost interacts daily with individual farmers, managing milk collection, testing fat content, and processing automated milk payments.

(d) These village societies are federated into a District Cooperative Milk Producers Union, which manages regional processing plants.

(e) The highest tier is the State Dairy Federation, which coordinates macro-marketing and state-wide product distribution networks.

Final Answer: Primary Milk Producers' Cooperative Society.

Answer: (C)

Go Back to Question 16

Q17.

Solution

Concept: Chemical weed control requires aligning herbicide selectivity with crop tolerance traits. Pre-emergence chemical choices must eliminate germinating weed seedlings without stunting the main crop.

Solution:

(a) Pearl millet crops face severe weed competition during their early development phases in arid, rainfed farming systems.

(b) Atrazine functions as a highly effective pre-emergence triazine herbicide when applied to the soil surface within two days of sowing.

(c) Pearl millet possesses internal metabolic pathways that rapidly detoxify absorbed atrazine molecules, protecting the crop from chemical injury.

(d) This selective action allows the chemical to target and kill germinating annual broad-leaved weeds and select grasses without harming the crop.

(e) Non-selective options like glyphosate kill all green vegetation, while post-emergence tools like 2,4-D can cause developmental abnormalities if applied too early.

Final Answer: Atrazine.

Answer: (A)

Go Back to Question 17

Q18.

Solution

Concept: Asexual plant propagation methods leverage cellular totipotency to preserve specific cultivar clones. The selected method must ensure high graft survival rates under harsh, dry atmospheric conditions.

Solution:

(a) Budding serves as the preferred vegetative propagation method for establishing commercial fruit orchards of improved Ber varieties like Gola and Seb.

(b) Ring budding provides excellent results, but the modern commercial standard relies on T-budding or Shield budding performed on hardy wild rootstocks.

(c) This method involves inserting a single vegetative bud shield into a T-shaped incision cut into the stem of a drought-hardy rootstock.

(d) The cambium layers bond rapidly, establishing a durable vascular connection that can withstand high temperatures and wind speeds.

(e) Simple propagation methods like hardwood cuttings exhibit poor rooting success rates when exposed to the low humidity of desert zones.

Final Answer: T- or Shield Budding.

Answer: (B)

Go Back to Question 18

Q19.

Solution

Concept: The Food Safety and Standards Authority of India (FSSAI) enforces strict legal quality parameters for fluid milk categories. These metrics regulate minimum milk fat and Solids-Not-Fat (SNF) percentages across commercial channels.

Solution:

(a) Commercial milk processing utilize centrifugation and skimming methods to adjust natural fat profiles into uniform consumer categories.

(b) Double Toned milk is formulated to provide a low-calorie, high-protein option by significantly lowering the fat content while maintaining core nutrients.

(c) The legal standard mandates that double toned milk must have its fat content reduced to exactly 1.5 percent.

(d) To ensure adequate nutritional value, the remaining non-fat solids must be maintained at a minimum level of 9.0 percent.

(e) Standard toned milk carries a higher fat threshold of 3.0 percent, whereas skimmed milk variations allow fat levels to drop below 0.5 percent.

Final Answer: Fat: 1.5%, SNF: 9.0%.

Answer: (C)

Go Back to Question 19

Q20.

Solution

Concept: Chemical preservatives inhibit microbial spoilage in processed fruit products by disrupting cellular membranes or enzymatic pathways. The choice of preservative depends on the natural pigments present in the fruit pulp.

Solution:

(a) Sodium benzoate functions as a highly effective preservative within acidic food matrix environments, operating with an optimum efficiency profile below a pH of 4.0.

(b) When mixed into fruit juices, it dissolves into benzoic acid, which penetrates microbial cell walls to slow down mold and yeast fermentation.

(c) Highly colored fruit products, such as mango or jamun squashes, require sodium benzoate because it preserves their natural anthocyanin and carotenoid pigments.

(d) Alternative options like Potassium Metabisulphite release sulfur dioxide gas, which can bleach natural plant pigments and discolor dark fruit pulps.

(e) Consequently, sodium benzoate remains the industry standard preservative for maintaining the visual appeal and shelf life of colored squashes.

Final Answer: Sodium benzoate.

Answer: (B)

Go Back to Question 20

Q21.

Solution

Concept: Crop rotation sequences form the core of sustainable conservation agriculture. In rainfed arid and semi-arid agro-ecosystems, selecting appropriate crop sequences helps maintain long-term soil health, balances organic matter depletion, controls targeted pest cycles, and optimizes seasonal moisture utilization profiles.

Solution:

(a) Rainfed regions of Western Rajasthan feature sandy soil matrices with low water-holding capacity and minimal baseline organic carbon reserves.

(b) Continuous cereal-cereal cultivation sequences dramatically deplete soil nutrient reserves and break down structural aggregation indices over time.

(c) Incorporating a restorative leguminous crop like cluster bean prior to a deep-rooted oilseed crop like mustard balances the systemic nitrogen budget.

(d) Cluster bean forms symbiotic relationships with Rhizobium bacteria, fixing atmospheric nitrogen to improve the baseline fertility status of the soil.

(e) This leguminous addition leaves significant residual moisture and nitrogen reserves in the root zone, maximizing the growth performance of the following mustard crop.

Final Answer: Cluster bean – Mustard.

Answer: (B)

Go Back to Question 21

Q22.

Solution

Concept: The therapeutic efficacy and market value of medicinal and aromatic plants depend directly on their primary phytochemical profiles. Classifying these active chemical principles helps researchers extract and standardize therapeutic treatments.

Solution:

(a) Safed Musli, biologically known as Chlorophytum borivilianum, is a vital medicinal herb widely grown under diverse agro-climatic conditions.

(b) The fleshy fascicled roots of this herb accumulate concentrated amounts of specialized secondary metabolites that determine its medicinal value.

(c) Phytochemical profiling reveals that saponins serve as the principal active compounds, imparting strong adaptogenic and health-promoting properties.

(d) Other common plant chemicals include sennosides, which provide laxative properties in senna leaves, and solasodine, found within select Solanum species.

(e) Modern pharmaceutical extraction methods isolate these specific root saponins to manufacture standardized health supplements and therapeutic treatments.

Final Answer: Saponin.

Answer: (C)

Go Back to Question 22

Q23.

Solution

Concept: Silage preservation relies on controlled anaerobic fermentation driven by native lactic acid bacteria. For effective preservation, the selected forage crops must contain sufficient water-soluble carbohydrates to support rapid lactic acid production.

Solution:

(a) The primary objective of silage making is to rapidly drop the internal pH of the packed forage matrix down to a stable range of 3.8 to 4.2.

(b) Lactic acid bacteria utilize water-soluble carbohydrates as an energy source to synthesize the organic acids needed to preserve the feed.

(c) Cereal fodder crops, such as maize and sorghum, naturally store high amounts of soluble sugars within their stalks during the milky-to-dough growth stages.

(d) Leguminous fodders like lucerne and berseem contain high crude protein levels and baseline calcium fractions, which buffer and slow down rapid acidification.

(e) Consequently, maize and sorghum serve as ideal silage crops, ensuring rapid preservation and maintaining excellent nutritional quality for livestock.

Final Answer: Maize and Sorghum.

Answer: (B)

Go Back to Question 23

Q24.

Solution

Concept: Seed storage management relies on strict control of internal moisture thresholds to preserve long-term physiological viability. Keeping seed moisture below critical limits prevents metabolic deterioration and limits storage pest issues.

Solution:

(a) High internal moisture levels trigger rapid cellular respiration within stored seeds, accelerating the consumption of limited embryo energy reserves.

(b) This metabolic acceleration generates localized heat and condensation, creating favorable conditions for destructive storage molds and weevils.

(c) Statutory seed certification standards mandate that certified cereal grain seeds must be dried to a strict safe moisture range of 8 to 10 percent before final packaging.

(d) Moisture levels above 12 percent cause rapid loss of seed viability and drop germination percentages far below acceptable field certification limits.

(e) Maintaining this dry threshold keeps the seed embryo in a stable state of suspended animation, preserving structural viability for extended storage periods.

Final Answer: 8% to 10%.

Answer: (A)

Go Back to Question 24

Q25.

Solution

Concept: Trace element deficiencies cause distinct physiological disorders in cole crops by disrupting key metabolic pathways. In highly acidic soils, chemical fixation renders specific micronutrients unavailable, leading to structural abnormalities.

Solution:

(a) Molybdenum functions as a key structural component of the nitrate reductase enzyme system, which regulates nitrogen assimilation pathways.

(b) When cole crops are grown in highly acidic soils, molybdenum bonds tightly with iron and aluminum oxides, making it unavailable to plant roots.

(c) This microelement starvation alters leaf blade development, causing the characteristic physiological disorder known as whiptail.

(d) Affected plants exhibit severely reduced, distorted leaf laminas that resemble narrow whips, leaving only the tough central midrib intact.

(e) Other common disorders, such as browning from boron deficiency or buttoning from nitrogen shortages, produce different structural symptoms in cauliflower heads.

Final Answer: Whiptail.

Answer: (C)

Go Back to Question 25

Q26.

Solution

Concept: Orchard layout designs use specific geometric configurations to optimize spatial distribution, maximize solar interception, and accommodate clear machinery movement channels between tree rows.

Solution:

(a) The square layout system establishes equal spacing between adjacent rows and individual trees, serving as the benchmark for orchard density calculations.

(b) The hexagonal layout system places trees at the corners of equilateral triangles, distributing plants evenly across the orchard floor.

(c) This geometric arrangement minimizes unused space between rows, accommodating exactly 15 percent more plants per unit area than the square system.

(d) The quincunx system also increases tree counts by adding a temporary filler tree in the center of each square, nearly doubling initial density.

(e) However, for long-term canopy management without filler trees, the hexagonal design remains the most effective way to increase plant populations by 15 percent.

Final Answer: Hexagonal System.

Answer: (B)

Go Back to Question 26

Q27.

Solution

Concept: Animal nutrition models use empirical mathematical formulas to calculate the total energy value of livestock feed components. The Total Digestible Nutrients (TDN) index estimates total usable energy by combining digestible organic fractions.

Solution:

(a) The TDN formula sums the digestible fractions of crude protein, crude fiber, nitrogen-free extract, and ether extract (crude fat).

(b) Because lipids store higher energy density per unit mass than carbohydrates, the digestible fat fraction requires a specific correction factor.

(c) Fat contains 2.25 times more digestible energy per gram than carbohydrates or proteins, making this multiplier essential for accurate energy estimation.

(d) Integrating this mathematical weight yields the standard equation: TDN = % Digestible Crude Protein + % Digestible Crude Fibre + % Digestible Nitrogen Free Extract + (% Digestible Ether Extract $\times$ 2.25).

(e) Nutritionists use this comprehensive equation to balance livestock rations and accurately assess the energy value of different farm feeds.

Final Answer: TDN = % Digestible Crude Protein + % Digestible Crude Fibre + % Digestible Nitrogen Free Extract + (% Digestible Ether Extract $\times$ 2.25).

Answer: (A)

Go Back to Question 27

Q28.

Solution

Concept: Acute infectious diseases in livestock present distinct clinical symptoms that allow for rapid field diagnosis and immediate quarantine control. Identifying these specific symptoms helps prevent large-scale outbreaks.

Solution:

(a) Black Quarter is an acute, localized, and highly lethal soil-borne bacterial infection that primarily impacts young, healthy cattle and sheep.

(b) The causative anaerobic pathogen, Clostridium chauvoei, produces highly destructive toxins that cause severe necrotizing myositis in heavy muscle groups.

(c) Lesions typically develop in the gluteal thigh muscles, causing severe lameness, high systemic fever, and rapid tissue swelling.

(d) Pressing these swollen areas produces a distinct crackling or crepitating sound, caused by gas bubbles accumulating as the bacteria destroy muscle tissue.

(e) While hemorrhagic septicemia and anthrax cause rapid livestock losses, they manifest with distinct respiratory or systemic bleeding patterns rather than localized muscle crepitation.

Final Answer: Black Quarter (BQ).

Answer: (C)

Go Back to Question 28

Q29.

Solution

Concept: Protective structures use structural design and material science modifications to mitigate extreme regional weather stress. In high-radiation zones, modifying shade materials reduces internal heat buildup.

Solution:

(a) Semi-arid areas across Rajasthan experience extreme solar radiation and high summer temperatures that can cause severe crop scorching.

(b) Standard glasshouses trap longwave thermal radiation through the greenhouse effect, leading to excessive heat accumulation that stunts plant growth.

(c) Naturally ventilated shade-net houses equipped with silver-aluminized linings reflect incoming infrared rays before they penetrate the growing canopy.

(d) This reflective material lowers internal temperatures and diffuses light evenly, preventing heat stress while allowing adequate photosynthesis.

(e) This balanced environment protects delicate vegetable crops and high-value nursery plants from heat stress without requiring expensive mechanical cooling systems.

Final Answer: Naturally ventilated shade-net house with silver-aluminized lining.

Answer: (C)

Go Back to Question 29

Q30.

Solution

Concept: Seed production programs require strict field management practices to preserve genetic purity. Removing atypical plants prevents unwanted cross-pollination and maintains the genetic standards of the seed line.

Solution:

(a) Roguing represents a fundamental field management practice required to maintain the strict genetic and phenotypic standards of certified seed crops.

(b) The process involves inspecting fields to identify and remove off-types, diseased individuals, or noxious weeds before flowering occurs.

(c) Removing these off-types prevents unwanted cross-pollination, protecting the seed line from genetic contamination and mechanical mixture.

(d) Other management practices, such as detasseling in maize or topping in tobacco, modify plant development rather than purifying the seed line.

(e) Consistent roguing across successive growth stages ensures the harvested seed lot meets required certification standards for genetic purity.

Final Answer: Roguing.

Answer: (B)

Go Back to Question 30

Q31.

Solution

Concept: Apiculture management relies on choosing appropriate honeybee species that match regional cropping patterns. For commercial apiaries situated within extensive oilseed tracts, selecting a species with high honey storage indices and non-aggressive foraging behavior optimizes production.

Solution:

(a) Apis mellifera, commonly known as the European or Italian honeybee, is highly favored for commercial honey production worldwide.

(b) This species is exceptionally well-suited for the blooming brassica crops that form the extensive mustard belts across Rajasthan.

(c) It features a calm disposition and strong resistance to swarming, allowing beekeepers to manage large colony groupings with minimal loss.

(d) Furthermore, its superior communication systems and active foraging range translate into high honey gathering rates per hive during peak flows.

(e) Wild alternatives like Apis dorsata produce substantial amounts of honey but exhibit fierce swarming behavior, making them unsafe for commercial operations.

Final Answer: Apis mellifera.

Answer: (C)

Go Back to Question 31

Q32.

Solution

Concept: Breeding protocols use systematic plant selection methods to modify the genetic structure of crop populations. Mass selection isolates visually superior individuals from a heterogeneous base population to improve agronomic traits.

Solution:

(a) Mass selection represents one of the oldest breeding practices used to enhance performance traits in both self and cross-pollinated crops.

(b) The breeder examines a large field population to identify and harvest individual plants that display desirable phenotypic characteristics.

(c) The seeds collected from these chosen plants are pooled together without separate progeny testing to grow the next generation.

(d) This bulk approach increases the frequency of favorable alleles in the overall population while preserving broad genetic diversity.

(e) In contrast, pure line selection keeps individual plant progenies separate, leading to strict homozygosity rather than a blended population line.

Final Answer: Mass selection.

Answer: (B)

Go Back to Question 32

Q33.

Solution

Concept: Drip irrigation filtration trains remove physical contaminants sequentially based on particle size. Emitter design relies on narrow passageways that can easily clog if suspended sediment or sand grains bypass filtration.

Solution:

(a) Micro-irrigation networks sourcing groundwater often encounter high loads of suspended sand, silt, and heavy inorganic particles.

(b) A hydrocyclone sand separator utilizes centrifugal force to spin out heavy sand grains, dropping them into a basal collection tank.

(c) While the hydrocyclone removes large sediment particles, finer silt fractions require a secondary screen or media filter.

(d) Passing water through this fine mesh screen captures any remaining particles, ensuring clean water reaches the field emitters.

(e) This sequential filtration process keeps the narrow emitter orifices free from blockages, maintaining uniform water distribution across rows.

Final Answer: Hydrocyclone sand separator followed by a Screen filter.

Answer: (B)

Go Back to Question 33

Q34.

Solution

Concept: The Pradhan Mantri Fasal Bima Yojana (PMFBY) uses a standardized premium rate structure for its insurance cover. The program sets uniform premium percentages based on crop classifications to encourage participation across regions.

Solution:

(a) PMFBY provides comprehensive insurance protection against yield shortfalls caused by non-preventable natural risks and weather anomalies.

(b) To keep insurance affordable for smallholders, the scheme subsidizes premiums, capping the farmer's financial obligation at fixed percentages.

(c) Food crops and oilseeds carry lower premium rates, with Kharif crops set at 2.0 percent and Rabi crops at 1.5 percent.

(d) High-value commercial horticultural crops and annual spice fields require more intensive inputs and are assigned a uniform premium rate of 5.0 percent.

(e) The central and state governments subsidize the remaining balance, ensuring farmers can protect their input investments against seasonal weather damage.

Final Answer: 5.0

Answer: (C)

Go Back to Question 34

Q35.

Solution

Concept: Biological pest management utilizes specialized parasitoids to disrupt target insect lifecycles during vulnerable developmental stages. Matching the biological agent with the correct pest stage optimizes field control.

Solution:

(a) Trichogramma chilonis is a tiny wasp widely utilized for biological control in integrated pest management programs.

(b) This micro-hymenopteran insect functions as an obligate egg parasitoid, targeting the egg masses of destructive lepidopteran pests.

(c) The female wasp inserts her eggs directly into the pest's eggs, destroying the developing embryo before it can hatch into a destructive larva.

(d) This early intervention targets pests like borers and bollworms, preventing crop damage before the destructive feeding stage begins.

(e) These specialized wasps are ineffective against subterranean termites or sucking insects, which require different biological controls like entomopathogenic fungi.

Final Answer: Lepidopteran egg mass and early stage borers.

Answer: (C)

Go Back to Question 35

Q36.

Solution

Concept: Commercial mushroom production relies on precise regulation of substrate conditions and environmental parameters across distinct growing phases. The spawn running phase requires specific conditions to support rapid mycelial colonization.

Solution:

(a) Cultivating white button mushrooms (*Agaricus bisporus*) requires a properly pasteurized compost substrate high in structured organic materials.

(b) The spawn running phase focuses entirely on encouraging rapid, uniform mycelial growth throughout the prepared compost beds.

(c) This vegetative phase requires a stable substrate moisture level of 65 to 70 percent paired with an ambient temperature of 22 to 25 °C.

(d) Additionally, the growing rooms must be kept dark with elevated carbon dioxide levels to stimulate aggressive mycelial expansion.

(e) Deviating from these conditions by introducing bright light or raw sand inhibits mycelial growth and encourages competing weed molds.

Final Answer: Sterilized synthetic compost with 65–70% moisture at 22–25 °C.

Answer: (B)

Go Back to Question 36

Q37.

Solution

Concept: The physical properties of milk components vary based on temperature and lipid configurations. Measuring the absolute density of pure milk fat helps processing plants calculate correct mass balance equations.

Solution:

(a) Milk components possess distinct specific gravity and density values that alter the physical properties of fluid dairy options.

(b) Pure milk fat consists of various glycerides that expand or contract in response to changing environmental temperatures.

(c) At a standard measurement temperature of 20 °C, pure milk fat exhibits an absolute density value of 0.930 g/cm^3.

(d) Other components, such as skim milk solids and proteins, display higher baseline values, typically exceeding 1.032 g/cm^3.

(e) This low density allows lipid globules to float upward, forming a distinct cream layer when fresh milk stands undisturbed.

Final Answer: 0.930 g/cm^3.

Answer: (B)

Go Back to Question 37

Q38.

Solution

Concept: Exogenous methods can overcome physical seed dormancy by disrupting restrictive structural layers. Mechanical methods focus on breaking tough, water-impermeable seed coats to allow proper hydration.

Solution:

(a) Hard-seeded crops often remain dormant because their tough seed coats prevent the entry of water and oxygen needed for germination.

(b) Scarification encompasses various physical methods used to scratch, crack, or soften these protective outer seed layers.

(c) This process can use mechanical abrasion with sandpaper, brief acid exposure, or hot water soaking to weaken the seed coat.

(d) This structural disruption allows water to enter, activating the embryo's metabolic pathways to begin normal field germination.

(e) Other methods like stratification or vernalization use cold treatments to satisfy embryo temperature requirements rather than altering physical barriers.

Final Answer: Scarification.

Answer: (A)

Go Back to Question 38

Q39.

Solution

Concept: Horticultural production zones develop around specific microclimates that suit particular fruit cultivars. Mapping these commercial growing regions helps identify where premium fruit varieties are concentrated.

Solution:

(a) The mandarin group includes several loose-skinned citrus varieties that require specific temperature ranges to produce high-quality fruit.

(b) The Jhalawar district features deep, fertile soils and a supportive humid climate that is ideal for growing Nagpur Santra mandarins.

(c) This regional microclimate produces excellent fruit quality, allowing Jhalawar to sustain extensive commercial orchards.

(d) This high concentration of citrus production has earned the region the nickname the Nagpur of Rajasthan.

(e) While Kinnow mandarins are grown extensively in northern districts like Sri Ganganagar, Nagpur Santra remains the dominant choice across southeastern areas.

Final Answer: Nagpur Santra.

Answer: (B)

Go Back to Question 39

Q40.

Solution

Concept: Fruit preservation methods rely on matching the chemical profile of the fruit extract with the requirements of the final product. Creating a stable, high-quality jelly requires a precise balance of specific organic structural components.

Solution:

(a) High-quality jelly production requires a clear fruit extract that can form a firm, elastic gel network upon cooling.

(b) Pectin serves as the structural gelling agent, cross-linking in the presence of sugar and acid to form a stable fruit gel.

(c) The fruit extract must also maintain an optimal acid profile, ideally around a pH of 3.2, to catalyze this gelling process.

(d) If the extract lacks sufficient pectin or acid, the mixture will fail to set properly, resulting in a weak, runny syrup.

(e) Fruits like guava naturally store excellent reserves of both pectin and acid, making them the standard choice for commercial jelly manufacturing.

Final Answer: High Pectin content and optimum Acid content.

Answer: (B)

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Answer Key

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	B	2	C	3	B	4	C	5	B
6	B	7	B	8	B	9	B	10	B
11	B	12	C	13	B	14	B	15	C
16	C	17	A	18	B	19	C	20	B
21	B	22	C	23	B	24	A	25	C
26	B	27	A	28	C	29	C	30	B
31	C	32	B	33	B	34	C	35	C
36	B	37	B	38	A	39	B	40	B