

CUET PG 2025 Animal Science Question Paper with Solutions

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

General Instructions:

1. Question Paper contains 75 Questions .
2. Each correct answer will have +4 marks and wrong answer will lead to -1

1. The process of converting ammonia into nitrate by soil bacteria is called as:

- (A) Mineralization
- (B) Nitrification
- (C) Nitrogen fixation
- (D) Immobilization

Correct Answer: (B) Nitrification

Solution: **Nitrification** is a crucial microbial process within the nitrogen cycle that makes nitrogen available to plants. It unfolds in two distinct stages, carried out by different groups of specialized bacteria. First, ammonia-oxidizing bacteria, such as those from the *Nitrosomonas* genus, convert ammonia (NH_3) or ammonium (NH_4^+) into nitrite (NO_2). In the second step, nitrite-oxidizing bacteria, like those from the *Nitrobacter* genus, further oxidize the nitrite into nitrate (NO_3). This final product, nitrate, is a highly soluble form of nitrogen that plants can readily absorb through their roots to synthesize proteins and nucleic acids.

 Quick Tip

Remember the nitrogen cycle steps: Fixation (gas to ammonia), Nitrification (ammonia to nitrate), and Denitrification (nitrate to gas). This question asks about the middle step.

2. How many percent of the dry weight of a plant is contributed by carbon?

- (A) 75
- (B) 35
- (C) 45
- (D) 25

Correct Answer: (C) 45

Solution: Carbon is the fundamental structural element of life, and plants acquire it directly from the atmosphere through photosynthesis. During this process, plants utilize solar energy to convert carbon dioxide (CO_2) and water into glucose, an energy-rich carbohydrate. This "fixed" carbon becomes the backbone for all essential organic macromolecules, including carbohydrates, proteins, lipids, and nucleic acids. When all the water is removed from a plant to measure its dry weight, carbon is found to constitute, on average, about **45%** of its total mass. Oxygen accounts for another 45%, and hydrogen makes up about 6%, with all other mineral nutrients comprising the small remainder.

 Quick Tip

Plants are primarily made of carbon, oxygen, and hydrogen, derived from CO_2 and water. Carbon and oxygen each make up about 45% of the plant's dry mass.

3. Jhuming is a practice of rice cultivation in _____ part of India.

- (A) Eastern
- (B) Western
- (C) Northern
- (D) Southern

Correct Answer: (A) Eastern

Solution: Jhuming, also widely known as shifting cultivation or the slash-and-burn technique, represents an ancient form of agriculture. The practice involves clearing a patch of forested land by cutting down vegetation and then burning it. The resulting ash enriches the soil with nutrients, allowing for cultivation for a few seasons. Once the soil fertility declines, the farmers abandon the plot and move to a new area, allowing the previous plot to undergo natural forest regeneration. This cyclical agricultural system is traditionally practiced by indigenous communities in the hilly, forested regions of **Eastern** and particularly North-Eastern India, in states like Arunachal Pradesh, Nagaland, Mizoram, and Meghalaya.

 Quick Tip

Jhuming is strongly associated with the tribal communities of the hilly, forested regions of North-East India.

4. The layer of atmosphere influencing earth's climate is:

- (A) Mesosphere
- (B) Stratosphere
- (C) Thermosphere
- (D) Troposphere

Correct Answer: (D) Troposphere

Solution: The **Troposphere** is the lowest and densest layer of the atmosphere, extending from the Earth's surface to an altitude of approximately 8-15 kilometers. Its significance to climate stems from the fact that it contains about 80% of the atmosphere's total mass and nearly all of its water vapor. The presence of water vapor enables the entire water cycle—evaporation, condensation, and precipitation—to occur. Furthermore, thermal convection within this layer drives air circulation, creating wind and weather systems. These combined phenomena, which we experience as weather, collectively determine the planet's long-term climate patterns.

 Quick Tip

Remember the atmospheric layers from the ground up: Troposphere, Stratosphere, Mesosphere, Thermosphere. All the "weather" and "climate" we experience happens in the Troposphere, the layer we live in.

5. The dairy cattle breed that originated in Montgomery district of Pakistan is:

- (A) Sahiwal
- (B) Red Sindhi
- (C) Tharparkar
- (D) Gir

Correct Answer: (A) Sahiwal

Solution: The **Sahiwal** is a breed of zebu (humped) cattle that is highly regarded as one of the best dairy breeds in the Indian subcontinent. It is particularly valued for its exceptional heat tolerance, resistance to parasites, and high milk production even under harsh climatic conditions. The breed gets its name from its place of origin, the Montgomery district (which is now named the Sahiwal district) in the Punjab province of Pakistan, a region characterized by its hot, dry climate.

 Quick Tip

Many cattle breeds are named after their place of origin. The Sahiwal breed is named after the Sahiwal district in Pakistan.

6. Match the LIST-I with LIST-II

LIST-I Breed	LIST-II Place of origin
A. Deoni	I. Gujarat
B. Kankrej	II. Andhra Pradesh
C. Ongole	III. Rajasthan
D. Rath	IV. Maharashtra

Choose the correct answer from the options given below:

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

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

Solution: The correct matching requires knowledge of the native tracts of these indigenous Indian cattle breeds. The **Deoni** (A) is a dual-purpose breed known for both draught work and milk production, and it originates from the Marathwada region, specifically Latur district, in **Maharashtra** (IV). The **Kankrej** (B) is a powerful draught breed recognized by its lyre-shaped horns, native to the arid Rann of Kutch region of **Gujarat** (I). The world-renowned **Ongole** (C) breed, prized for its strength and beef quality, hails from the Prakasam district in **Andhra Pradesh** (II). Lastly, the **Rath** (D), a popular milch breed, is primarily found in the arid desert regions of **Rajasthan** (III). Therefore, the correct sequence of matches is A-IV, B-I, C-II, D-III.

 Quick Tip

For breed matching questions, try to recall one or two famous ones. For example, Kankrej from Gujarat or Ongole from Andhra Pradesh can help you quickly eliminate wrong options.

7. Match the LIST I with LIST II

LIST-I Avian Influenza Strain	LIST-II First species & Country re-reported in
A. H1N1	I. Quail, Italy
B. H5N2	II. Chick, Scotland
C. H7N1	III. Turkey, England
D. H10N8	IV. Ducks, Alberta

Choose the correct answer from the options given below:

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

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

Solution: This question tests very specific knowledge of historical events in veterinary virology, matching avian influenza (AI) strains to notable early or initial reports. According to the intended answer key, the correct pairings are based on specific documented outbreaks. For instance, the highly pathogenic **H5N2** (B) strain was associated with a significant outbreak in **Ducks in Alberta**, Canada (IV). While a famous H7N1 outbreak occurred in Italy, the question's logic as per the correct option C maps **H1N1** (A) to **Quail, Italy** (I), **H7N1** (C) to **Chick, Scotland** (II), and **H10N8** (D) to **Turkey, England** (III). Such questions rely on recalling detailed epidemiological history rather than general knowledge of the viruses.

 Quick Tip

Avian influenza matching questions are tough. Focus on any well-known outbreaks you remember to help narrow down the possibilities. H7N1 in Italy was a significant event in avian influenza history.

8. Which of the following diseases in poultry is caused by fungus

- (A) Aspergillosis

- (B) Botulism
- (C) Erysipelas
- (D) Infectious Bursal Disease

Correct Answer: (A) Aspergillosis

Solution: **Aspergillosis** is a respiratory disease caused by a fungus. The causative agent is typically *Aspergillus fumigatus*, a mold that thrives in damp, poorly ventilated environments on substrates like contaminated feed or wet litter. Young birds (chicks) are particularly susceptible, and when they inhale a large number of fungal spores, they can develop severe pneumonia, which is why the disease is often called "Brooder Pneumonia". In contrast, Botulism is caused by a bacterial toxin, Erysipelas is a bacterial infection, and Infectious Bursal Disease (Gumboro disease) is caused by a virus.

 Quick Tip

The name "Aspergillosis" comes from the causative agent, the fungus *Aspergillus*. This direct link makes it easy to identify as the fungal disease.

9. Which one of these is the most common symptom of Bird's Fino?

- (A) Unilateral paralysis
- (B) Gasping and trembling
- (C) Watery discharges
- (D) Pox lesions

Correct Answer: (B) Gasping and trembling (with clarification)

Solution: Presuming "Bird's Fino" is a typographical error for Bird Flu, or Avian Influenza, the symptoms can vary greatly depending on the virulence of the viral strain. For highly pathogenic avian influenza (HPAI), the virus causes a severe systemic infection. This leads to profound damage to the respiratory tract, causing acute respiratory distress, which manifests as **gasp**ing for air. Concurrently, the virus often affects the central nervous system, leading to neurological signs such as **trembling**, torticollis (twisted neck), and lack of coordination. This combination of severe respiratory and neurological symptoms is a hallmark of the disease. The other options are less characteristic; watery discharges are non-specific, pox lesions are caused by a different virus (Avipoxvirus), and paralysis is a possible but not as universally common sign as gasping and trembling.

 Quick Tip

Highly pathogenic Bird Flu is a severe respiratory and neurological disease. Look for symptoms that reflect this, such as difficulty breathing (gasp)ing and nerve-related issues (trembling).

10. Match the LIST I with LIST II

LIST-I Cattle Disease	LIST-II Causative Agent
A. Anthrax	I. <i>Mycobacterium bovis</i>
B. Black Quarter	II. <i>Brucella abortus</i>
C. Tuberculosis	III. <i>Clostridium chauvoei</i>
D. Brucellosis	IV. <i>Bacillus anthracis</i>

Choose the correct answer from the options given below:

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

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

Solution: This matching exercise pairs common bovine diseases with their specific bacterial pathogens. **Anthrax** (A), a rapidly fatal septicemic illness, is caused by the spore-forming bacterium *Bacillus anthracis* (IV). **Black Quarter** (B), an acute muscular infection in cattle, is caused by *Clostridium chauvoei* (III). Bovine **Tuberculosis** (C), a chronic respiratory disease, is caused by *Mycobacterium bovis* (I). Finally, **Brucellosis** (D), a reproductive disease that often causes abortions, is caused by *Brucella abortus* (II). Following this logic, the correct series of matches is A-IV, B-III, C-I, D-II.

💡 Quick Tip

Learning the scientific names of causative agents is key in veterinary medicine. Matching Anthrax with *Bacillus anthracis* is a straightforward connection that can help simplify the question.

11. Choose an incorrect statement about Green House Effect.

- (A) Life on earth is possible due to the greenhouse effect.
- (B) The emission of greenhouse gases is a natural process.
- (C) The greenhouse effect maintains the earth's temperature.
- (D) Increased emission of greenhouse gases emissions into the atmosphere is linked to global warming.

Correct Answer: All statements appear correct; there might be an issue with the question itself. However, if forced to choose the "most" incorrect or misleading, it could be (B) in the context of anthropogenic contributions. Let's assume the question is valid. The question asks for an incorrect statement. Let's re-evaluate. All the statements are factually correct. Let's assume there is a mistake in the question or options. Let's pick the one that is most debated. Option D.

Solution: An analysis of each statement reveals that all are scientifically correct, suggesting a flaw in the question's premise of containing an incorrect statement.

- **(A) is correct** because the natural greenhouse effect traps some of the sun's heat, raising the Earth's average temperature from a frigid -18°C to a habitable 15°C .
- **(B) is correct** as greenhouse gases like CO_2 and methane are constantly released through natural sources such as volcanic eruptions, decomposition of organic matter, and animal respiration.
- **(C) is correct**; this is the primary function of the effect, creating a stable temperature range by balancing incoming solar radiation with outgoing thermal radiation.
- **(D) is correct** as the overwhelming scientific consensus confirms that the rapid increase in greenhouse gases from human activities (the enhanced greenhouse effect) is the primary driver of modern global warming.

Given that all four statements are factually accurate, the question itself is flawed.

 Quick Tip

Distinguish between the natural greenhouse effect (which is essential for life) and the enhanced greenhouse effect (which is causing global warming due to human activity). All the statements provided are scientifically accepted facts.

12. The predominant gas present in the atmosphere is:

- (A) Propane
- (B) Butane
- (C) Carbon monoxide
- (D) Carbon dioxide

Correct Answer: This question is flawed. The most predominant gas is Nitrogen ($\sim 78\%$). The options provided are all trace gases. Of the options listed, Carbon Dioxide is the most significant in terms of its role as a greenhouse gas.

Solution: The question is fundamentally flawed because the most predominant gas in Earth's atmosphere is Nitrogen ($\sim 78\%$), followed by Oxygen ($\sim 21\%$) and Argon ($\sim 0.9\%$), none of which are listed as options. The choices provided are all trace gases present in much smaller quantities. To find the correct answer among the given options, we must compare their typical atmospheric concentrations:

- **Carbon dioxide (CO_2):** approximately 420 parts per million (ppm), or 0.042%.
- **Carbon monoxide (CO):** highly variable, but typically around 0.1 ppm.
- **Propane (C_3H_8) and Butane (C_4H_{10}):** present in extremely low concentrations, measured in parts per billion (ppb).

Therefore, of the four gases listed, **Carbon dioxide** is by far the most abundant.

💡 Quick Tip

The Earth's atmosphere is mainly Nitrogen and Oxygen. Gases like CO₂ are present in very small amounts (parts per million), but they can have a large impact on the climate.

13. The newly registered breed of chicken "Hansli" belongs to the state of:

- (A) Odisha
- (B) Uttarakhand
- (C) Punjab
- (D) West Bengal

Correct Answer: (A) Odisha

Solution: "Hansli" is an indigenous breed of chicken that was officially registered by the National Bureau of Animal Genetic Resources (NBAGR) to recognize its unique genetic makeup and promote its conservation. This breed is native to the state of **Odisha**. Specifically, its home tract lies within the tribal regions of the Mayurbhanj and Keonjhar districts, where it is well-adapted to the local environment and thrives under backyard farming systems due to its excellent foraging ability and disease resistance.

💡 Quick Tip

India has a rich diversity of native livestock breeds. Many have been recently registered to help in their conservation. Remembering a few key native breeds from different states can be helpful.

14. Match the LIST-I with LIST-II

LIST-I Development Programme Scheme	LIST-II Objective
A. Mission Antyodaya	I. Urban-like facilities in rural areas
B. Sansad Adarsh Gram Yojana	II. Improvement in land productivity
C. Shyama Prasad Mukherji Rurban Mission	III. Effective use of resources
D. Integrated Water Management Programme	IV. Development of Gram Panchayats

Choose the correct answer from the options given below:

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

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

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

Solution: To correctly match these rural development schemes with their objectives, we must understand their core focus:

- **Mission Antyodaya (A)** is a convergence framework that aims to alleviate poverty by ensuring the **effective use of resources (III)** from various government programs at the Gram Panchayat level.
- **Sansad Adarsh Gram Yojana (B)** involves Members of Parliament adopting and nurturing specific villages, focusing on the holistic **development of Gram Panchayats (IV)** into model villages.
- The **Shyama Prasad Mukherji Rurban Mission (C)** focuses on developing clusters of villages by providing economic, social, and physical infrastructure, essentially creating **urban-like facilities in rural areas (I)**. The term "Rurban" itself is a portmanteau of Rural and Urban.
- The **Integrated Watershed Management Programme (D)** aims to restore ecological balance by harnessing, conserving, and developing degraded natural resources like soil and water, leading to an **improvement in land productivity (II)**.

This analysis confirms the correct combination is A-III, B-IV, C-I, D-II.

 Quick Tip

Focus on the keywords in the scheme names. 'Rurban' = Rural + Urban. 'Adarsh Gram' = Ideal Village (Gram Panchayat). 'Water Management' relates to land productivity. This can guide you to the right objectives.

15. Herpes virus is known to cause which disease in poultry:

- (A) Ranikhet
(B) Avian Influenza
(C) Infectious Bronchitis
(D) Marek's disease

Correct Answer: (D) Marek's disease

Solution: **Marek's disease** is a highly contagious disease of chickens caused by an alphaherpesvirus called Gallid alphaherpesvirus 2. This virus is oncogenic, meaning it causes cancer. It primarily targets lymphocytes (a type of white blood cell), leading to the formation of cancerous lymphomas in nerves, which causes paralysis, and in various organs and tissues. In contrast, Ranikhet disease is caused by a paramyxovirus, Avian Influenza by an orthomyxovirus, and Infectious Bronchitis by a coronavirus.

💡 Quick Tip

Marek's disease is one of the most well-known and economically important diseases in poultry caused by a herpesvirus. This is a key fact in avian pathology.

16. Which among the following diseases is non-infectious in origin:

- (A) Rabies
- (B) Listeriosis
- (C) Trichomoniasis
- (D) Milk fever

Correct Answer: (D) Milk fever

Solution: **Milk fever**, technically known as parturient paresis, is a metabolic disorder, not an infectious one. It arises from an acute deficiency of calcium in the bloodstream (hypocalcemia). This condition typically affects high-yielding dairy cows shortly after calving, when the sudden and immense physiological demand for calcium to produce colostrum and milk outstrips the body's ability to mobilize calcium reserves from bones. This calcium deficit impairs nerve and muscle function, leading to weakness and paralysis. The other options are all infectious: Rabies is caused by a virus, Listeriosis by a bacterium, and Trichomoniasis by a protozoan parasite.

💡 Quick Tip

"Fever" in a disease name doesn't always mean infection. Milk fever is a classic example of a metabolic disease caused by a mineral imbalance, not a germ.

17. Choose the correct statements:

1. Panting is the sequelae of food and mouth disease
2. Hydrophobia is a characteristic of Rabies
3. Penicillin act against Peptydoglycan
4. Zebra marking in the intestines is the pathognomonic lesion of Rinderpest

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

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

Solution: A detailed evaluation of each statement is required:

- **A is False.** The common sequelae (after-effects) of Foot and Mouth Disease (FMD) include chronic lameness due to hoof damage, mastitis, and myocarditis (heart muscle damage), which can lead to poor heat tolerance ("panting"). However, lameness is the most characteristic sequela, making the statement as written misleading.
- **B is True.** Hydrophobia, an intense fear of water, is a classic and terrifying symptom of rabies in humans. It is caused by severe, painful spasms of the throat and larynx muscles when attempting to swallow.
- **C is True.** Penicillin is a beta-lactam antibiotic. Its mechanism of action is to inhibit the enzymes responsible for forming cross-links in peptidoglycan, a polymer essential for the structural integrity of bacterial cell walls. This weakens the cell wall, leading to bacterial death.
- **D is True.** A pathognomonic lesion is a sign that is specifically distinctive of a particular disease. In cases of Rinderpest (now eradicated), severe inflammation of the intestinal lining would lead to linear hemorrhages, creating a pattern that resembled "zebra markings," a classic post-mortem finding.

Thus, the correct statements are B, C, and D.

💡 Quick Tip

Pathognomonic lesions are "smoking gun" signs for a specific disease. The zebra markings of Rinderpest are a classic example taught in veterinary pathology.

18. If the values of two variables move in the same direction, then the correlation is said to be:

- (A) Positive
- (B) Negative
- (C) Linear
- (D) Non Linear

Correct Answer: (A) Positive

Solution: Correlation measures the statistical relationship between two variables. A **positive correlation** exists when the variables change in the same direction. This means that as the value of one variable increases, the value of the other variable tends to increase as well; conversely, as one decreases, the other tends to decrease. For example, there is a positive correlation between temperature and ice cream sales—as the weather gets hotter, more ice cream is sold. This relationship is quantified by a correlation coefficient between 0 and +1.

💡 Quick Tip

Think of it like a see-saw. In a positive correlation, both ends go up or down together. In a negative correlation, when one end goes up, the other goes down.

19. If the mean and mode of some data are 6 & 12 respectively, its median will be:

- (A) 4
- (B) 6
- (C) 8
- (D) 10

Correct Answer: (C) 8

Solution: This problem can be solved using the empirical relationship, an approximation developed by Karl Pearson that connects the mean, median, and mode for unimodal, moderately skewed distributions. The formula is:

$$\text{Mode} = 3 \times \text{Median} - 2 \times \text{Mean}$$

To find the median, we can algebraically rearrange this formula:

$$3 \times \text{Median} = \text{Mode} + 2 \times \text{Mean}$$

$$\text{Median} = \frac{\text{Mode} + 2 \times \text{Mean}}{3}$$

Now, we substitute the given values (Mean = 6, Mode = 12) into the rearranged formula:

$$\text{Median} = \frac{12 + 2 \times (6)}{3}$$

$$\text{Median} = \frac{12 + 12}{3}$$

$$\text{Median} = \frac{24}{3} = 8$$

Therefore, the median of the data is **8**.

💡 Quick Tip

Memorize the empirical formula: $\text{Mode} = 3(\text{Median}) - 2(\text{Mean})$. It's a quick way to find one measure of central tendency if you know the other two for skewed data.

20. An example of an organelle within an organelle is:

- (A) Ribosome
- (B) Lysosome
- (C) Endoplasmic Reticulum
- (D) Golgi complex

Correct Answer: (A) Ribosome

Solution: This question relates to the endosymbiotic theory of cellular evolution. According to this theory, mitochondria and chloroplasts were once free-living prokaryotic organisms that were engulfed by a larger eukaryotic cell. As evidence of this ancestry, these organelles retain

their own distinct circular DNA and their own machinery for protein synthesis, including **ribosomes**. These mitochondrial and chloroplast ribosomes are of the 70S type, similar to prokaryotic ribosomes, and they function inside the larger membrane-bound organelles. Therefore, a ribosome serves as a functional "organelle" (or large macromolecular machine) operating within another organelle.

 Quick Tip

Mitochondria and chloroplasts are often called 'semi-autonomous' organelles because they have their own DNA and ribosomes, allowing them to produce some of their own proteins.

21. Diploid (2n) number of chromosomes in chicken is:

- (A) 60
- (B) 54
- (C) 78
- (D) 80

Correct Answer: (C) 78

Solution: The diploid (2n) chromosome number represents the total number of chromosomes found in a somatic (non-sex) cell of an organism, consisting of two complete sets, one inherited from each parent. For the domestic chicken (*Gallus gallus domesticus*), this number is **78**. The avian karyotype is unusual, comprising a small number of large macrochromosomes and a large number of very small microchromosomes. The chicken's 78 chromosomes include 38 pairs of autosomes and one pair of sex chromosomes, which follow the ZW system of sex determination (ZZ for males and ZW for females).

 Quick Tip

Remember that 'diploid (2n)' refers to the total number of chromosomes in a somatic cell, consisting of two complete sets (one from each parent).

22. During the zygotene stage of prophase-I:

- (A) Two homologous chromosomes attract each other
- (B) Two sister chromatids of homologous chromosomes form tetrad
- (C) Exchange of genetic material takes place
- (D) Chiasmata formation takes place

Correct Answer: (A) Two homologous chromosomes attract each other

Solution: The **zygotene** is the second stage of meiotic prophase-I. Its defining event is synapsis, which is the process where **two homologous chromosomes (one from each parent) find each other and begin to pair up closely along their entire length**. This

attraction and pairing are mediated by a protein structure called the synaptonemal complex, which acts like a zipper to hold the homologs together. This precise alignment is crucial for the genetic recombination (crossing over) that will occur in the next stage, pachytene. The formation of a visible tetrad, the actual exchange of genetic material, and the appearance of chiasmata all happen in later stages.

 Quick Tip

Think 'Zygo-' as in zygote, which involves pairing. Zygotene is the pairing (synapsis) stage of homologous chromosomes.

23. An intra-allelic gene interaction where one pair of genes masks the expression of another non-allelic gene is termed as:

- (A) Dominance
- (B) Polygenetic Traits
- (C) Multiple allelism
- (D) Epistasis

Correct Answer: (D) Epistasis

Solution: The phenomenon described is **epistasis**, which is a form of inter-allelic (between different genes) interaction. In epistasis, the phenotypic expression of a gene at one locus is masked or modified by the expression of a gene at a different locus. A classic example is coat color in Labrador retrievers, where a gene for pigment deposition can mask the gene for pigment color (black/brown). It is important to distinguish this from dominance, which is an intra-allelic interaction describing how two alleles of the *same* gene interact with each other in a heterozygote. The question contains a typo; it should refer to "inter-allelic" interaction for the definition to be perfectly accurate for epistasis.

 Quick Tip

Distinguish between dominance (interaction between alleles of the *same* gene) and epistasis (interaction between alleles of *different* genes).

24. Egg Production in poultry is an example of:

- (A) Sex limited Trait
- (B) Sex linked Trait
- (C) Sex Influenced Trait
- (D) Determined Trait

Correct Answer: (A) Sex limited Trait

Solution: Egg production is a quintessential example of a **sex-limited trait**. The genes responsible for characteristics like ovulation rate, shell quality, and laying frequency are

located on the autosomes (non-sex chromosomes) and are therefore present in the genomes of both male (roosters) and female (hens) chickens. However, the expression of these genes into the phenotype of producing eggs is entirely dependent on the presence of a female reproductive system and the female hormonal environment (e.g., high levels of estrogen). Because the trait's expression is confined, or 'limited', to only one sex, it is classified as sex-limited.

💡 Quick Tip

Sex-limited traits are expressed in only one sex, while sex-influenced traits (like pattern baldness) are expressed differently in males and females.

25. Rhode Island Red is a breed of:

- (A) Duck
- (B) Pigeon
- (C) Chicken
- (D) Turkey

Correct Answer: (C) Chicken

Solution: The **Rhode Island Red** is an iconic American breed of domestic **chicken**. Developed in the late 19th century in the states of Rhode Island and Massachusetts, it is a quintessential dual-purpose breed. This means it was selectively bred to be a prolific layer of brown eggs while also having a large enough frame to be a valuable table bird for meat production, making it a staple of small farms for many decades.

💡 Quick Tip

Rhode Island Red and Plymouth Rock are two of the most famous and versatile American chicken breeds.

26. Panmixia is the other name of:

- (A) Random Mating
- (B) Phenotypic assortative mating
- (C) Phenotypic disassortative mating
- (D) Genetic assortative mating

Correct Answer: (A) Random Mating

Solution: **Panmixia**, or panmictic breeding, is a fundamental concept in population genetics that describes a model of **Random Mating**. In a panmictic population, every individual has an equal probability of mating with any other individual of the opposite sex. There is no mate selection based on genetic traits, physical appearance (phenotype), or spatial proximity.

This condition of random mating is a primary assumption for the Hardy-Weinberg equilibrium principle, which describes a theoretical population that is not evolving.

 Quick Tip

Panmixia is a key assumption of the Hardy-Weinberg equilibrium principle, which describes a non-evolving population.

27. In selfing heterozygosity is lost by how much in each generation.

- (A) $1/4$
- (B) $1/3$
- (C) $1/2$
- (D) $2/3$

Correct Answer: (C) $1/2$

Solution: Self-fertilization, or "selfing," is the most intense form of inbreeding possible. When a heterozygous individual (e.g., Aa) is selfed, the resulting offspring genotypes are in a 1:2:1 ratio (1 AA : 2 Aa : 1 aa). While the initial parental generation was 100% heterozygous, the offspring generation is only 50% (or $2/4$) heterozygous. This means that with each successive generation of selfing, the proportion of heterozygotes within the population is precisely halved. Therefore, the rate of heterozygosity loss is $1/2$ per generation.

 Quick Tip

Selfing is the fastest way to increase homozygosity in a population. The proportion of heterozygotes is always halved with each successive generation.

28. What is true about inbreeding?

1. Inbreeding helps to eliminate lethal characters.
2. Inbreeding depression negatively impacts productivity.
3. Inbreeding increases Hybrid Vigor.
4. Inbreeding increases genetic variance between lines.

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

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

Solution: A thorough analysis of the effects of inbreeding is required:

- **A is True:** Inbreeding increases the frequency of homozygous genotypes. This forces deleterious or lethal recessive alleles, which are harmless in heterozygotes, to be expressed phenotypically. This allows breeders to identify and select against these undesirable characters, effectively purging them from the population.
- **B is True:** Inbreeding depression is the reduction in fitness and performance (e.g., lower fertility, slower growth, higher mortality) that often accompanies increased homozygosity. This is a significant negative consequence of sustained inbreeding.
- **C is False:** Inbreeding is the opposite of what creates hybrid vigor (heterosis). Hybrid vigor results from crossing two different inbred lines, which restores heterozygosity and masks deleterious recessive alleles. Inbreeding itself leads to a loss of vigor.
- **D is True:** While inbreeding decreases genetic variation *within* a specific line (making all individuals more similar to each other), it increases the genetic divergence *between* different inbred lines. This creates distinct, uniform families that are genetically different from one another.

Therefore, statements A, B, and D accurately describe aspects of inbreeding.

💡 Quick Tip

Inbreeding is a double-edged sword: it increases homozygosity, which is good for fixing desirable traits but bad due to the risk of inbreeding depression.

29. Species crossing is also called as:

- (A) Panmixia
- (B) Line breeding
- (C) Species hybridization
- (D) Grading up

Correct Answer: (C) Species hybridization

Solution: The mating of individuals belonging to two distinct biological species is termed **species hybridization** or interspecific hybridization. The resulting offspring, known as a hybrid, often exhibits a combination of traits from both parent species. The most famous example in livestock is the mule, a sterile hybrid resulting from the cross of a male donkey (*Equus asinus*) and a female horse (*Equus caballus*).

💡 Quick Tip

Think 'inter-species' for species hybridization. The mule (horse x donkey) is the most famous example of a species hybrid.

30. MOET stands for

- (A) Mid ovulation embryo technique
- (B) Multiple ovulation embryo technique
- (C) Mid ovulation embryo transfer
- (D) Multiple ovulation and embryo transfer

Correct Answer: (D) Multiple ovulation and embryo transfer

Solution: MOET is an acronym for the assisted reproductive technology known as **Multiple Ovulation and Embryo Transfer**. This multi-step process is designed to accelerate genetic improvement in livestock. It begins with treating a genetically superior female (donor) with hormones (like FSH) to induce superovulation, causing her to release many eggs instead of the usual one. She is then artificially inseminated. The resulting embryos are collected non-surgically (flushed) from her uterus and then transferred into the uteri of recipient females (surrogates) who carry the pregnancies to term.

 Quick Tip

MOET is all about quantity. It uses hormones to get 'Multiple Ovulations' so many embryos can be collected and 'Transferred' to surrogates.

31. Which among the following is not an economic trait in sheep:

- (A) Fibre diameter
- (B) Lactation yield
- (C) Twinning percentage
- (D) Prolificacy

Correct Answer: (B) Lactation yield

Solution: Economic traits are characteristics that directly influence the profitability of an enterprise. In sheep raised for wool and meat, Fibre diameter (A) is crucial for wool quality and price. Twinning percentage (C) and Prolificacy (D), which both relate to the number of lambs born, directly increase the number of animals available for sale. In contrast, for these types of sheep, **Lactation yield** (B) is not a primary economic trait. While a ewe must produce enough milk to raise her lambs, the milk itself is not sold commercially, so maximizing its volume is not a selection goal. This differs from specialized dairy sheep breeds where lactation yield is paramount.

 Quick Tip

Economic traits are those that directly generate income. For most sheep, this means wool, meat, and the number of lambs born (prolificacy).

32. Capon is:

- (A) Laying hen

- (B) Chickens with testicles
- (C) Chicken without testicles
- (D) Moulting hen

Correct Answer: (C) Chicken without testicles

Solution: A **capon** is a rooster (a male chicken) that has been surgically castrated, meaning it is a **chicken without testicles**. The procedure is performed at a young age, and the removal of the testes prevents the production of male hormones like testosterone. This hormonal change results in the bird growing larger, with more body fat and a more tender, flavorful meat than that of an intact rooster, making it a culinary delicacy.

 Quick Tip

A capon is to a rooster what a steer is to a bull—a castrated male raised for better quality meat.

33. The incubation period of Quail is:

- (A) 24 days
- (B) 21 days
- (C) 18 days
- (D) 15 days

Correct Answer: (C) 18 days

Solution: The incubation period is the time required for a fertilized egg to develop and hatch. For the Japanese quail (*Coturnix japonica*), which is the species most commonly farmed for eggs and meat, this period is significantly shorter than for many other poultry species, lasting approximately **17 to 18 days**. This rapid generation time is one of the reasons quail farming can be very productive. For comparison, the incubation period for chickens is 21 days.

 Quick Tip

Incubation periods get longer with bird size: Quail (~18 days), Chicken (21 days), Duck/Turkey (~28 days).

34. The act of laying in poultry is called:

- (A) Viviposition
- (B) Vivipary
- (C) Ovovivipary
- (D) Oviposition

Correct Answer: (D) Oviposition

Solution: The correct biological term for the process of laying eggs is **Oviposition**. The term is derived from Latin roots: "ovum," meaning egg, and "positio," meaning to place or deposit. The other terms describe different reproductive strategies: Vivipary (B) refers to giving birth to live young that have developed inside the mother's body (e.g., mammals). Ovovivipary (C) describes a method where eggs are retained and hatch within the mother's body before the young are released (e.g., some sharks). Viviposition (A) is not a standard biological term.

 Quick Tip

Break down the Latin roots: 'Ovi-' means egg and 'position' means to place. Oviposition = the act of placing (laying) an egg.

35. Crazy chick disease in chicken is caused by the deficiency of

- (A) Vitamin E
- (B) Vitamin B12
- (C) Vitamin A
- (D) Vitamin B2

Correct Answer: (A) Vitamin E

Solution: "Crazy chick disease" is the common name for nutritional encephalomalacia, a severe neurological disorder affecting young chicks. The condition is a direct result of a dietary deficiency in **Vitamin E**. Vitamin E is a powerful lipid-soluble antioxidant that protects cell membranes from damage by free radicals. The brain is particularly susceptible to this oxidative stress due to its high fat content and metabolic rate. Without sufficient Vitamin E, the cerebellum degenerates, leading to the characteristic clinical signs of incoordination (ataxia), falling over backwards, and tremors.

 Quick Tip

Vitamin E is a key antioxidant for the nervous system. Its deficiency leads to neurological signs, hence the name 'Crazy Chick Disease'.

36. An example of Mendelian disorder is:

- (A) Klinefelter's syndrome
- (B) Night blindness
- (C) Down's Syndrome
- (D) Turner's syndrome

Correct Answer: (B) Night blindness (with clarification)

Solution: A Mendelian disorder is a genetic condition caused by a mutation in a single gene that follows the inheritance patterns described by Gregor Mendel. In contrast, Klinefelter's

syndrome (XXY), Down's syndrome (Trisomy 21), and Turner's syndrome (XO) are chromosomal disorders, caused by an abnormal number of chromosomes (aneuploidy). While some forms of night blindness are caused by nutritional deficiencies (like Vitamin A), several congenital forms are inherited as single-gene, **Mendelian** traits. These can be autosomal dominant, autosomal recessive, or X-linked, making **Night blindness** the correct choice among the options.

 Quick Tip

Mendelian disorders involve single genes, while chromosomal disorders (like Down, Turner, Klinefelter) involve issues with whole chromosomes.

37. The number of bar bodies in case of 47, XXXX is:

- (A) 1
- (B) 2
- (C) 3
- (D) 4

Correct Answer: (C) 3

Solution: A Barr body is an inactivated X chromosome found in the somatic cells of individuals with two or more X chromosomes. This process, known as lyonization or X-inactivation, ensures that females (XX) and males (XY) have a similar dosage of X-linked gene products. In any given cell, all X chromosomes except one are randomly inactivated and condense into a compact structure visible as a Barr body. The number of Barr bodies can be calculated with the simple formula: (Total number of X chromosomes) - 1. For an individual with a 47,XXXX karyotype, there are four X chromosomes. Applying the formula: $4 - 1 = 3$ Barr bodies.

 Quick Tip

The formula is simple and reliable: (Number of X chromosomes) - 1. A normal human female (XX) has $2 - 1 = 1$ Barr body.

38. AUG codes for:

- (A) Methionine
- (B) Lysine
- (C) Glycine
- (D) Alanine

Correct Answer: (A) Methionine

Solution: The genetic code is a set of rules used by living cells to translate information encoded within genetic material (DNA or mRNA sequences of nucleotide triplets, or codons)

into proteins. The mRNA codon **AUG** has a crucial dual function. Primarily, it specifies the amino acid **Methionine**. Secondly, it serves as the universal **start codon**, signaling the ribosome to begin the process of protein synthesis (translation). Therefore, nearly every protein initially begins with methionine.

 Quick Tip

Think of school starting in AUGust. The AUG codon is the 'start' codon for protein synthesis and it codes for Methionine.

39. Stop codons are:

1. UAA
2. UAG
3. UGA
4. CUG

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

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

Solution: Stop codons, also known as termination or nonsense codons, are specific three-nucleotide sequences in messenger RNA (mRNA) that signal the end of protein synthesis. When a ribosome encounters one of these codons during translation, it triggers the release of the newly synthesized polypeptide chain. In the standard genetic code, there are three such stop codons: **UAA** (nicknamed "ochre"), **UAG** ("amber"), and **UGA** ("opal"). The codon CUG is a sense codon that codes for the amino acid Leucine. Therefore, only A, B, and C are stop codons.

 Quick Tip

Remember the three stop codons with a mnemonic: 'You Are Away' (UAA), 'You Are Gone' (UAG), and 'You Go Away' (UGA).

40. ZW - ZZ type of chromosomes are found in:

- (A) Insects
(B) Humans
(C) Butterflies
(D) Birds

Correct Answer: (D) Birds

Solution: The ZW-ZZ system is a method of chromosomal sex determination. It is fundamentally different from the XY system found in humans and fruit flies. In the ZW system, the male is the homogametic sex, possessing two identical sex chromosomes (ZZ), while the female is the heterogametic sex, with two different sex chromosomes (ZW). The ovum produced by the female determines the sex of the offspring. This system is characteristic of all **birds**, as well as some fish, crustaceans, reptiles (like the Komodo dragon), and insects (including butterflies and moths, which makes option C also correct but D is the broader, more common answer).

 Quick Tip

In the ZW system (found in birds), the female (ZW) determines the sex of the offspring, which is the opposite of the XY system in humans where the male (XY) determines the sex.

41. In chicken disease Fowl Cholera is caused by

- (A) *Pasteurella multocida*
- (B) *Salmonella pullorum*
- (C) *Salmonella gallinarum*
- (D) *Salmonella typhimurium*

Correct Answer: (A) *Pasteurella multocida*

Solution: Fowl Cholera is a highly contagious bacterial disease that affects domestic and wild birds. The causative agent is the bacterium ***Pasteurella multocida***. The disease can manifest in an acute form, causing high mortality, or a chronic form with localized infections. It is important not to confuse this with diseases caused by *Salmonella*. *Salmonella pullorum* causes Pullorum disease, *Salmonella gallinarum* causes Fowl Typhoid, and *Salmonella typhimurium* causes paratyphoid infections.

 Quick Tip

Fowl Cholera is caused by a *Pasteurella* bacterium, not *Salmonella*. Remember that different species of *Salmonella* cause other diseases like Pullorum and Fowl Typhoid.

42. Steps in extension teaching include

1. Attention
2. Desire
3. Action
4. Satisfaction

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

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

Solution: The process of extension teaching involves guiding a learner through a sequence of mental stages that lead to the adoption of a new idea or practice. A widely accepted model for this process is represented by the acronym AIDCAS. The elements listed in the question are all integral parts of this sequence:

- **Attention:** The first step is to capture the farmer's or learner's attention and make them aware of the issue or innovation.
- **Desire:** After gaining interest, the extension agent works to create a strong desire in the learner to change their current situation or adopt the new practice.
- **Action:** This is the crucial step where the learner moves from wanting to do something to actually doing it, applying the new knowledge or skill.
- **Satisfaction:** For the change to be permanent, the learner must derive satisfaction from the results of their action, reinforcing the decision to adopt the practice.

Since all four steps are essential components of the teaching-learning process in extension, the correct answer includes A, B, C, and D.

 Quick Tip

Effective teaching is a process. It must first capture **Attention**, then create **Desire**, which leads to **Action** and hopefully ends in **Satisfaction**.

43. The mating system used to combine good qualities of two breeds is called as:

- (A) Line breeding
- (B) Close breeding
- (C) Out crossing
- (D) Cross breeding

Correct Answer: (D) Cross breeding

Solution: **Cross-breeding** is a specific mating system where animals from two different established breeds are deliberately mated. The primary objective is to produce offspring that benefit from heterosis (hybrid vigor) and exhibit a combination of the most desirable characteristics from each parent breed (breed complementarity). For example, a beef breed known for rapid growth might be crossed with a dairy breed known for good maternal ability to produce productive female replacements. Line breeding and close breeding are forms of inbreeding, while outcrossing involves mating unrelated animals within the same breed.

 Quick Tip

Think 'cross' as in 'across different breeds'. Cross-breeding aims to get the best of both worlds from two distinct breeds.

44. The newly registered breed of cattle "Sanchori" belongs to

- (A) Rajasthan
- (B) Meghalaya
- (C) Bihar
- (D) Manipur

Correct Answer: (A) Rajasthan

Solution: The "Sanchori" is an indigenous breed of cattle that was officially recognized and registered by the National Bureau of Animal Genetic Resources (NBAGR). The breed derives its name directly from its native tract, which is the Sanchore tehsil in the Jalore district of the state of **Rajasthan**. It is a draught-purpose animal, well-adapted to the arid and semi-arid conditions of that region.

 Quick Tip

Many Indian cattle breeds are named after their place of origin. Sanchori cattle come from the Sanchore region of Rajasthan.

45. Match the LIST-I with LIST-II

LIST-I Name of Scheme	LIST-II Starting Year
A. Panchayati Raj	I. 2015
B. Key Village Scheme	II. 1969
C. Mera Gaon Mera Gaurav	III. 1959
D. Jawahar Rozgar Yojna	IV. 1952

Choose the correct answer from the options given below:

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

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

Solution: A correct match requires knowledge of the launch years of these significant Indian government schemes.

- **A. Panchayati Raj:** The three-tier system of local self-governance was formally inaugurated by Prime Minister Jawaharlal Nehru on October 2, **1959**, in Nagaur, Rajasthan. Therefore, A matches with III.
- **B. Key Village Scheme:** An early, major initiative for cattle development and artificial insemination services, this scheme was launched during the First Five Year Plan in **1952**. Therefore, B matches with IV.
- **C. Mera Gaon Mera Gaurav:** This initiative, aimed at promoting direct contact between agricultural scientists and farmers, was launched in **2015**. Therefore, C matches with I.
- **D. Jawahar Rozgar Yojana:** This large-scale rural employment program was launched in 1989. Since 1989 is not an option, and the intended correct answer pairs D with II (**1969**), there is a clear error in the question's provided options. However, based on the correct matches for A, B, and C, the only possible choice is (C).

The only combination that correctly aligns the first three schemes is A-III, B-IV, and C-I.

💡 Quick Tip

When dealing with matching questions about government schemes, focus on the most famous ones first (like Panchayati Raj). This can help eliminate incorrect options quickly.

46. When the number of pages exceeds 50, it is called a

- (A) Pamphlet
- (B) Bulletin
- (C) Book
- (D) News report

Correct Answer: (C) Book

Solution: The classification of printed materials often depends on their length. According to the definition provided by UNESCO for statistical purposes, a **book** is a non-periodical printed publication consisting of 49 or more pages, not including the covers. A publication with fewer pages, typically between 5 and 48, is classified as a pamphlet. Therefore, a document with more than 50 pages clearly falls into the category of a book.

💡 Quick Tip

Think of the page count distinctions: a few pages is a leaflet, 5-48 pages is a pamphlet, and 49+ pages is a book.

47. Steps in preparation of Radio talks are

1. Selection of topic
2. Collection of facts
3. Presentation
4. Preparing outline and script

Choose the most appropriate option

- (A) A, B, C, D
- (B) A, B, D, C
- (C) B, A, D, C
- (D) C, B, D, A

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

Solution: The creation of any effective communication piece, including a radio talk, follows a logical and structured process. The correct sequence of steps ensures clarity, accuracy, and impact.

1. **A. Selection of topic:** The process must begin with a clear decision on the subject matter.
2. **B. Collection of facts:** Once the topic is chosen, comprehensive research is undertaken to gather all relevant information, data, and supporting details.
3. **D. Preparing outline and script:** The collected facts are then organized into a logical structure or outline, which serves as the blueprint for writing the final, word-for-word script.
4. **C. Presentation:** The final step is the actual delivery or broadcast of the prepared script.

This sequence, $A \rightarrow B \rightarrow D \rightarrow C$, represents the most efficient and logical workflow from conception to delivery.

 Quick Tip

Think of it like writing an essay: first, pick a topic, then research it, then outline and write, and finally, present or submit it.

48. Intestinal coccidiosis in poultry is caused mainly by

- (A) *E. necatrix*
- (B) *E. tenella*
- (C) *E. brunetti*
- (D) *E. acervulina*

Correct Answer: (A) *E. necatrix* and (B) *E. tenella* are major causes.

Solution: Intestinal coccidiosis is a widespread and economically damaging parasitic disease in poultry, caused by protozoa from the genus *Eimeria*. Different species of *Eimeria* have a

preference for specific sections of the intestine and vary in their pathogenicity. Among the most severe are:

- ***Eimeria tenella*** (B): This species is highly pathogenic and specifically infects the ceca, causing severe hemorrhage, which leads to bloody droppings and high mortality.
- ***Eimeria necatrix*** (A): This species is also highly pathogenic, primarily affecting the middle of the small intestine (jejunum), causing significant intestinal damage, hemorrhage, and mortality.

While other species like *E. brunetti* and *E. acervulina* also cause disease, *E. tenella* and *E. necatrix* are renowned for causing the most severe forms of intestinal and cecal coccidiosis.

 Quick Tip

Remember that different *Eimeria* species target different parts of the chicken's gut. *E. tenella* (in the ceca) and *E. necatrix* (in the small intestine) are two of the most damaging.

49. An accurate representation of quantitative data is:

- (A) Chart
- (B) Flash cards
- (C) Flannel board
- (D) Graph

Correct Answer: (D) Graph

Solution: While various tools can display numerical information, a **graph** is specifically designed for the accurate visual representation of quantitative data and the relationships between variables. A graph uses a coordinate system (typically with an x-axis and a y-axis) to plot data points precisely, allowing for clear visualization of trends, correlations, and distributions. Charts (like pie charts or bar charts) display quantitative data but may be better for showing proportions or comparisons rather than precise relationships. Flash cards and flannel boards are teaching aids for presenting information, not for accurate data analysis.

 Quick Tip

Graphs (like line graphs or scatter plots) are ideal for showing the precise relationship between variables, making them the most accurate tool for quantitative data.

50. A scenic representation of the original is called

- (A) Specimen
- (B) Model
- (C) Diorama
- (D) Map

Correct Answer: (C) Diorama

Solution: A **diorama** is a three-dimensional, full-size or miniature replica of a scene. Its key characteristic is that it represents not just an object, but a scene in its environmental context, often using a painted background to create a sense of depth and realism. For example, a museum might display a model of a dinosaur within a diorama that recreates its prehistoric habitat. A model is typically a representation of a single object, while a specimen is an actual sample of the original.

 Quick Tip

Think of museum exhibits that show historical events or natural habitats in 3D—those are dioramas.

51. A group of knowledgeable persons to whom some matter is referred for detailed examination is called a

- (A) Organisation
- (B) Committee
- (C) Panchayat
- (D) Trainer

Correct Answer: (B) Committee

Solution: A **committee** is a specific type of group that is formally constituted and delegated a particular function by a larger organization or body. Its purpose is to bring together individuals with relevant expertise or interest to consider, investigate, and report on a specific matter. The committee's work allows for a more focused and detailed examination of an issue than would be possible in a larger assembly.

 Quick Tip

A committee is a 'group with a mission'. It's formed to tackle a specific task that requires expert attention.

52. Providing small loans that are repaid within short periods of time used by low income individuals is called

- (A) Credit
- (B) Microfinance
- (C) Capital
- (D) Bonus

Correct Answer: (B) Microfinance

Solution: **Microfinance** is a broad category of financial services provided to low-income individuals or groups who traditionally lack access to the formal banking sector. Its most

well-known component is microcredit, which involves providing very small loans (microloans) for entrepreneurial activities, which are repaid over short periods. However, microfinance also encompasses other services like microsavings and microinsurance, all designed to promote financial inclusion and economic self-sufficiency.

 Quick Tip

'Micro' means small. Microfinance refers to small-scale financial services for people who can't access large banks.

53. The Land to lab programme (LLP) was launched by the ICAR in

- (A) 1979
- (B) 1992
- (C) 1949
- (D) 2001

Correct Answer: (A) 1979

Solution: The Lab to Land Programme (LLP) was a significant agricultural extension initiative launched by the Indian Council of Agricultural Research (ICAR). It was inaugurated in **1979** to commemorate the ICAR's Golden Jubilee. The core objective of the program was to facilitate the transfer of proven, low-cost agricultural technologies developed in research laboratories ("the Lab") directly to small and marginal farmers and landless laborers ("the Land") to improve their livelihoods and economic conditions.

 Quick Tip

The Lab to Land Programme was a major initiative by ICAR to bridge the gap between agricultural research (the 'lab') and farmers (the 'land').

54. Thematic mapping is an application of

- (A) Geographic Information Systems
- (B) The Web
- (C) Interactive multimedia
- (D) Information technology

Correct Answer: (A) Geographic Information Systems

Solution: A thematic map is designed to display the spatial pattern of a particular theme or attribute, such as population density, soil types, or rainfall levels. The technology primarily used to create such maps is **Geographic Information Systems (GIS)**. A GIS is a powerful computer-based tool that allows for the capture, storage, analysis, and visualization of geospatial data. It enables users to overlay different layers of information (e.g., roads,

elevation, land use) and to symbolize features based on their attributes, which is the essence of thematic mapping.

 Quick Tip

GIS is the technology behind modern digital mapping. If a map is showing a specific 'theme' (like rainfall patterns), it was likely made using GIS.

55. A system of signals for communication is called as

- (A) Channel
- (B) Message
- (C) Code
- (D) Speech

Correct Answer: (C) Code

Solution: In communication theory, a **code** is a systematic set of rules used to convert information from one form into another. This conversion process, known as encoding, allows information (a message) to be transmitted via a channel. The code consists of a defined set of signals (symbols, sounds, gestures) and the rules for combining them to represent specific meanings. Examples range from human language (a code of words and grammar) to Morse code (a code of dots and dashes).

 Quick Tip

Think of Morse code or computer code. Both are systems of signals (dots/dashes or 1s/0s) used to communicate information.

56. The study of the behavior of an economic system as a whole is called

- (A) Microeconomics
- (B) Macroeconomics
- (C) Budget
- (D) Expenditure

Correct Answer: (B) Macroeconomics

Solution: Economics is broadly divided into two main branches. **Macroeconomics** ('macro' meaning large) analyzes the economy at a broad, aggregate level. It focuses on economy-wide phenomena and variables such as the Gross Domestic Product (GDP), national income, aggregate demand and supply, inflation rates, and unemployment. It seeks to understand the forces that affect the entire economic system. In contrast, microeconomics focuses on the behavior of individual economic units like consumers, firms, and industries.

💡 Quick Tip

'Macro' means large-scale. Macroeconomics looks at the big picture: entire countries' economies, GDP, and inflation. 'Micro' looks at small parts: individual businesses and consumer choices.

57. In economics, all those goods that satisfy human wants constitute

- (A) Wealth
- (B) Value
- (C) Commodity
- (D) Supply

Correct Answer: (A) Wealth

Solution: In the field of economics, the term **wealth** has a specific definition. It refers to the net stock of all assets that hold value, which includes all goods and services that can satisfy human wants. For something to be considered part of wealth, it must possess three key characteristics: utility (the ability to satisfy a want), scarcity (it must be limited in supply relative to demand), and transferability (its ownership can be passed from one person to another).

💡 Quick Tip

Wealth isn't just money. In economics, it's the total collection of all useful, scarce, and transferable things that satisfy our wants.

58. A voluntary organization that promotes the economic interests of its members and all the members have equal rights is called

- (A) Joint stock company
- (B) Partnership organization
- (C) Co-operative society
- (D) Public sector company

Correct Answer: (C) Co-operative society

Solution: A **Co-operative society** is a unique form of business organization based on the principle of cooperation for mutual benefit. It is an association of individuals who join together voluntarily to pursue a common economic objective. The defining characteristic of a cooperative is its democratic governance structure, where control is vested in the members themselves, typically following the rule of "one member, one vote." This ensures that all members have equal rights and a say in the organization's affairs.

💡 Quick Tip

The key ideas of a co-operative are 'voluntary' and 'democratic control'. It's all about members working together for mutual benefit.

59. Match the LIST I with LIST II

LIST-I	LIST-II
A. HMT	I. Building
B. Milk union	II. Public sector company
C. Fixed capital	III. Town
D. Regional market	IV. Co-operative society

Choose the correct answer from the options given below:

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

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

Solution: This question requires matching concepts and examples from economics and business.

- **A. HMT** (Hindustan Machine Tools Limited) is a prominent manufacturing company owned by the Government of India, making it a prime example of a **Public sector company** (II).
- **B. Milk union**, such as the district cooperative milk producers' unions that form organizations like Amul, are structured as a **Co-operative society** (IV), owned and operated by the farmers themselves.
- **C. Fixed capital** refers to long-term, durable assets used in production that are not consumed in a single production cycle. A **Building** (I) is a classic example of a fixed capital asset.
- **D. Regional market** is a market defined by its geographical scope, which is larger than a local market but smaller than a national one, often encompassing a **Town** (III) or a cluster of towns.

The correct set of matches is therefore A-II, B-IV, C-I, D-III.

💡 Quick Tip

For matching questions, start with the easiest pair to match. HMT being a public sector company is a well-known fact and can quickly narrow down the options.

60. The capital which can be put to alternative uses is called

- (A) Fixed capital
- (B) Working capital
- (C) Sunk capital
- (D) Floating capital

Correct Answer: (D) Floating capital

Solution: Floating capital refers to assets that are not tied to a single purpose and can be easily adapted or reallocated to alternative uses. This category includes assets that are liquid or have general-purpose applications, such as cash, raw materials, or generic equipment. This is in stark contrast to sunk capital, which is invested in a highly specialized asset that cannot be repurposed, and fixed capital, which refers to durable but often specialized assets like buildings.

 Quick Tip

Think 'floating' as in not tied down. Floating capital can be moved or used for different things, unlike 'sunk' capital which is stuck in one investment.

61. When one male cock is mated to 15-20 hens, the method of mating is called as:

- (A) Artificial insemination
- (B) Stud mating
- (C) Flock mating
- (D) Cross - breeding

Correct Answer: (C) Flock mating

Solution: Flock mating is a natural mating system used in poultry breeding where one or more males are housed together with a group (a flock) of females. Mating occurs randomly and naturally within the group. A common recommended ratio for chickens is one rooster for every 10 to 20 hens to ensure high fertility across the flock. This system requires minimal labor compared to stud mating, where females are brought to the male individually.

 Quick Tip

'Flock mating' is simple: the whole flock lives and mates together. This is the most common natural mating system in commercial poultry.

62. Curled toe paralysis in chicks is caused by deficiency of

- (A) Thiamine
- (B) Biotin

- (C) Riboflavin
(D) Calcium & Phosphorus

Correct Answer: (C) Riboflavin

Solution: Curled toe paralysis is a pathognomonic sign of a deficiency in **Riboflavin**, also known as Vitamin B2. Riboflavin is essential for the body's energy metabolism and is a component of the coenzymes FAD and FMN. In growing chicks, a deficiency impairs the normal development and function of the nervous system, particularly the sciatic nerve, which leads to the degeneration of nerve sheaths and results in the characteristic inward curling of the toes and paralysis.

 Quick Tip

Remember the 'R' in Riboflavin for 'cuRled' toes. This specific symptom is strongly associated with Vitamin B2 deficiency in chicks.

63. Match the LIST I with LIST II

LIST-I	LIST-II
A. Retail market	I. Books
B. Local market	II. World Trade Organization
C. World market	III. Final consumers
D. Capital market	IV. Village

Choose the correct answer from the options given below:

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

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

Solution: This question requires matching different types of markets with their defining characteristics or examples.

- **A. Retail market:** This is the final stage in the distribution channel where businesses sell goods directly to **Final consumers** (III) for personal use.
- **B. Local market:** This market is geographically limited to a small area, such as a **Village** (IV), where local producers and consumers interact.
- **C. World market:** This refers to the global trade of goods and services between countries, which is regulated and facilitated by international bodies like the **World Trade Organization** (II).

- **D. Capital market:** This is a market for long-term financial assets like stocks and bonds. The option **Books** (I) is an unusual and poor match. However, it's the only remaining option, and perhaps refers to the "books of accounts" or "order books" used in finance.

Based on the three clear matches, the correct sequence is A-III, B-IV, C-II, D-I.

 Quick Tip

Focus on the clear matches first. Retail markets serve final consumers, and local markets are village-level. This will help you eliminate incorrect answer choices.

64. The process of raising capital to carry out various activities in marketing is called

- (A) Risk bearing
- (B) Financing
- (C) Grading
- (D) Standardization

Correct Answer: (B) Financing

Solution: Financing is a fundamental facilitating function of marketing that involves the acquisition and management of funds (capital) necessary to support the entire marketing process. Capital is required to invest in inventory, pay for transportation and storage, fund promotional campaigns, and manage the time lag between when a product is produced and when payment is received from the customer.

 Quick Tip

Raising money (capital) for any business activity is, by definition, financing.

65. The sum total of all the activities related to crop raising or setting up livestock or fisheries units on a piece of land is known as

- (A) Middle management
- (B) Farm management
- (C) Resource management
- (D) Operative management

Correct Answer: (B) Farm management

Solution: Farm management is a field of agricultural economics that deals with the application of economic and business principles to the organization and operation of a farm. It involves decision-making on how to best allocate resources like land, labor, and capital among various enterprises—such as crop raising, livestock rearing, or fisheries—with the

objective of maximizing profitability and sustainability. It is essentially the business administration of a farm.

💡 Quick Tip

Farm management is the 'business side' of farming. It involves all the planning and decision-making for everything that happens on the farm.

66. ----- are the most suitable sanitizers for the meat industries.

- (A) Chlorine based sanitizers
- (B) Quaternary Ammonium Compounds
- (C) Peroxides
- (D) Ozone

Correct Answer: (A) Chlorine based sanitizers

Solution: **Chlorine-based sanitizers**, such as sodium hypochlorite and chlorine dioxide, are extensively used and highly suitable for the meat industry. Their suitability stems from several key advantages: they have a broad spectrum of antimicrobial activity effective against bacteria, viruses, and fungi; they are fast-acting; and they are very cost-effective. These properties are essential for maintaining the stringent hygiene standards required in meat processing facilities to control pathogens like *Listeria*, *Salmonella*, and *E. coli* on equipment and food contact surfaces.

💡 Quick Tip

Chlorine is a powerful, cheap, and fast-acting disinfectant, making it a go-to choice for the demanding hygiene standards of the meat industry.

67. Antemortem examination of food animals should be done ----- hours prior to slaughter.

- (A) 12 hours
- (B) 24 hours
- (C) 48 hours
- (D) 72 hours

Correct Answer: (B) 24 hours

Solution: Antemortem inspection is a mandatory veterinary public health procedure to ensure food safety. Regulatory standards, such as those set by FSSAI in India and the USDA in the United States, mandate that all animals intended for slaughter must be examined by a veterinarian within **24 hours** before slaughter. This timeframe allows the animals to rest after transport, which helps in identifying any signs of disease or abnormalities that might be

masked by stress. The examination aims to detect any systemic diseases, injuries, or conditions that would render the meat unsafe for human consumption.

 Quick Tip

The standard waiting period for antemortem inspection is one full day (24 hours) to allow animals to rest and to check for any signs of disease that might have been masked by the stress of transport.

68. HACCP principles include

1. Conduct a hazard analysis
2. Determine the CCP's
3. Establish the critical limits
4. Food manufacturing

Choose the correct answer from the options given below:

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

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

Solution: HACCP (Hazard Analysis and Critical Control Points) is a systematic management system for food safety. It is built upon seven core principles. The statements listed correspond to the first three foundational principles:

1. **(A) Conduct a hazard analysis:** This involves identifying all potential biological, chemical, and physical hazards that could reasonably occur at each step of the food production process.
2. **(B) Determine the Critical Control Points (CCPs):** A CCP is a specific point in the process where control can be applied and is essential to prevent, eliminate, or reduce a food safety hazard to an acceptable level.
3. **(C) Establish critical limits:** For each CCP, a critical limit is defined. This is a maximum or minimum value to which a parameter (like temperature, time, or pH) must be controlled to ensure the hazard is managed effectively.

Statement (D), "Food manufacturing," describes the context in which HACCP is applied, not a principle of the system itself. Therefore, only A, B, and C are correct principles.

 Quick Tip

HACCP is a *system of analysis and control*. "Food manufacturing" is the *subject* of that system, not a part of it. The first three steps are Hazard Analysis, finding Control Points, and setting Critical Limits.

69. Application of high pressures around 650 MPa in food processing to reduce the microbial load is called

- (A) Pasteurization
- (B) Emulsification
- (C) Pascalsation
- (D) Fermentation

Correct Answer: (C) Pascalsation

Solution: Pascalsation, more commonly known as High-Pressure Processing (HPP), is a non-thermal food preservation method. It involves subjecting food, typically in its final flexible packaging, to extremely high hydrostatic pressures (e.g., 300-700 MPa) transmitted by water. This intense pressure disrupts the cellular structures of microorganisms like bacteria and yeast, effectively inactivating them without the use of heat. This "cold pasteurization" technique helps to preserve the food's natural flavor, color, texture, and nutritional content better than traditional heat-based methods.

 Quick Tip

The unit of pressure is the Pascal (Pa). This makes it easy to remember that the food processing method using high pressure is called Pascalsation.

70. To determine proper pasteurization of milk, the test commonly used is

- (A) Phosphatase test
- (B) Rosalic acid test
- (C) MBRT
- (D) α -amylase test

Correct Answer: (A) Phosphatase test

Solution: The **Phosphatase test** is the universally accepted method for verifying the adequacy of milk pasteurization. This test is based on the presence of the enzyme alkaline phosphatase, which is naturally found in raw milk. The heat treatment conditions (time and temperature) required for pasteurization are slightly more severe than those needed to denature this enzyme. Therefore, if the test is negative (no enzyme activity detected), it provides strong evidence that the milk was heated sufficiently to kill pathogenic bacteria. A positive result indicates under-pasteurization or post-pasteurization contamination with raw milk.

 Quick Tip

Think of the phosphatase enzyme as an indicator. If it's destroyed, the "bad" bacteria were likely destroyed too. A negative phosphatase test means pasteurization was successful.

71. The sequence of steps in poultry slaughtering units includes

1. Stunning
2. Scalding
3. Bleeding
4. Evisceration

Choose the correct answer from the options given below:

- (A) A, B, C, D
- (B) A, C, B, D
- (C) B, A, D, C
- (D) C, B, D, A

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

Solution: The process of poultry slaughter follows a strict, logical sequence to ensure humane treatment, food safety, and processing efficiency. The correct order is:

1. **A. Stunning:** The bird is first rendered unconscious and insensible to pain, which is a critical animal welfare step.
2. **C. Bleeding:** Immediately following stunning, the major blood vessels in the neck are severed to allow for rapid and complete exsanguination.
3. **B. Scalding:** After bleeding, the carcass is immersed in hot water. This process loosens the feathers in their follicles, making them easy to remove during the subsequent de-feathering stage.
4. **D. Evisceration:** After de-feathering, the internal organs are carefully removed from the body cavity.

This sequence, $A \rightarrow C \rightarrow B \rightarrow D$, is standard practice in modern processing plants.

💡 Quick Tip

The process follows a logical flow: make unconscious, remove blood, prepare for feather removal (scalding), and finally, remove the organs.

72. The main component of egg yolk is

- (A) Carbohydrates
- (B) Lipids
- (C) Proteins
- (D) Vitamins

Correct Answer: (B) Lipids

Solution: While an egg yolk contains a mixture of nutrients, its composition is dominated by **lipids** (fats). An average yolk is about 50% water. Of the remaining solid components (dry matter), lipids constitute the largest fraction, typically making up about 60-65%. These lipids, including triglycerides and cholesterol, serve as a concentrated source of energy for the developing embryo. Proteins are the second most abundant component, accounting for about 30-35% of the dry matter. Carbohydrates and vitamins are present in much smaller quantities.

 Quick Tip

A simple way to remember is: egg white is almost pure protein and water, while the yolk is a rich mix of fats (lipids) and protein. The fats are the most significant component of the yolk by weight.

73. *Streptococcus agalactiae* and *Streptococcus uberis* are common causative agents of

- (A) Enteritis
- (B) Mastitis
- (C) Pneumonia
- (D) Endocarditis

Correct Answer: (B) Mastitis

Solution: Both *Streptococcus agalactiae* and *Streptococcus uberis* are significant bacterial pathogens in the dairy industry, primarily known for causing **mastitis**, which is an inflammation of the mammary gland (udder). *S. agalactiae* is a contagious pathogen that lives in the udder and spreads between cows, often during milking. *S. uberis* is an environmental pathogen, meaning the cow acquires the infection from its surroundings, such as contaminated bedding. Both lead to infection and inflammation, reducing milk quality and yield.

 Quick Tip

The species name *agalactiae* literally translates to "no milk," which is a direct hint about the disease it causes—mastitis affects milk production in the udder.

74. Young chickens that are usually 6-10 weeks of age with a dressed weight of 1.13 kg or more are called

- (A) Capon
- (B) Broilers
- (C) Rooster
- (D) Light fowl

Correct Answer: (B) Broilers

Solution: The term **Broilers** specifically refers to chickens that have been genetically selected and raised for efficient meat production. These birds exhibit very rapid growth rates

and are typically processed at a young age, commonly between 5 to 10 weeks, when they reach the desired market weight as described in the question. A capon is a castrated male, a rooster is a mature adult male, and light fowl typically refers to egg-laying breeds, which have a much smaller frame.

💡 Quick Tip

"Broilers" are raised for "broiling" or other cooking methods. This term is specific to chickens produced for meat.

75. Match the LIST I with LIST II

LIST-I	LIST-II
A. Probiotic	I. Chicks
B. Hen	II. <i>Lactobacillus acidophilus</i>
C. Fowl	III. Broilers
D. Starter feed	IV. <i>Gallus domesticus</i>

Choose the correct answer from the options given below:

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

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

Solution: To find the correct combination, we must match each term in List-I with its most logical counterpart in List-II.

- **A. Probiotic:** A probiotic is a live beneficial microorganism. *Lactobacillus acidophilus* (II) is a well-known species of probiotic bacteria used in animal feeds and human supplements.
- **C. Fowl:** This is a term for domestic birds raised for meat or eggs, most commonly the domestic chicken. *Gallus domesticus* (IV) is the scientific binomial name for the domestic chicken.
- **D. Starter feed:** This is a specialized, high-protein feed formulated to meet the nutritional needs of very young birds during their first few weeks of life. It is fed to Chicks (I).
- **B. Hen:** A hen is an adult female chicken. While not a perfect match, within the given options, it is paired with Broilers (III). This is the only remaining option, likely linking the general term for an adult bird to a production class.

Based on these pairings, the correct sequence is A-II, C-IV, D-I, and B-III.

 Quick Tip

For matching questions, solve the most definitive pairs first. "Fowl" matching its scientific name and "Probiotic" matching a known bacterium are the easiest connections to make.
