

ICAR AIEEA PG 2025 Animal Science Question Paper With Solutions

Time Allowed :120 Minutes	Maximum Marks :480	Total questions :120
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General Instructions

Read the following general instructions carefully and adhere to them strictly:

1. **Duration of the Exam:** The total duration of the examination is 2 hours and 30 minutes.
2. **Total Marks:** The question paper carries a total of 480 marks.
3. **Number of Questions:** The paper contains 120 multiple-choice questions (MCQs)
4. **Question Paper Format:**
 - All questions are compulsory unless otherwise instructed.
 - Each question has four options, out of which only one is correct.
5. **Mode of Examination:** The examination is conducted in online mode (Computer-Based Test).
6. **Marking Scheme:**
 - Each correct answer carries 4 marks.
 - 1 mark will be deducted for each incorrect answer.
 - No marks will be awarded or deducted for unattempted questions.
7. **Medium of Paper:** The question paper will be bilingual (English and Hindi), except for the language section (if applicable).
8. **Rough Work:** Rough sheets will be provided in the exam hall. No extra sheets are allowed.
9. **Electronic Devices:** Use of calculators, mobile phones, smartwatches or any electronic gadgets is strictly prohibited.

1. Which condition must be met for a population to be in Hardy-Weinberg equilibrium?

- (A) Small population size
- (B) No mutation
- (C) Natural selection occurs
- (D) Non-random mating

Correct Answer: (B) No mutation

Solution:

According to the Hardy-Weinberg equilibrium principle, a population's allele frequencies remain constant only when five conditions are met: (1) Large population size, so that genetic drift does not affect frequencies; (2) Random mating must occur; (3) No mutations, because mutations introduce new alleles; (4) No migration in or out of the population; and (5) No natural selection acting on the alleles. If any condition is violated, the population may evolve. Therefore, "no mutation" is one of the required conditions to maintain the equilibrium.

Quick Tip

Remember: The five conditions are a classic MCQ trap — memorize them for breeding questions!

2. Which is an advantage of loose housing for dairy cattle?

- (A) Higher construction cost
- (B) Difficult estrus detection
- (C) Better exercise for animals
- (D) Higher labor requirement

Correct Answer: (C) Better exercise for animals

Solution:

Loose housing means animals are kept in an open paddock with sheds. It allows cattle to move freely, promoting natural behavior and better health. Better exercise reduces lameness, increases fertility, and helps detect heat easily because animals interact freely. In contrast,

conventional barn systems restrict movement as cows are tied in stalls, leading to stress and higher labor costs for cleaning. Also, loose housing is cheaper to build.

Quick Tip

Link loose housing with freedom, low cost, better heat detection, and less disease.

3. What is bypass protein in ruminant nutrition?

- (A) Protein fully degraded in rumen
- (B) Protein that bypasses digestion completely
- (C) Protein escaping rumen degradation and digested in intestines
- (D) Protein without nitrogen

Correct Answer: (C) Protein escaping rumen degradation and digested in intestines

Solution:

Ruminants have microbes in their rumen that degrade most dietary proteins into ammonia, which microbes use to grow. However, high-yielding animals like dairy cows require high-quality proteins that should reach the small intestine undigested by microbes. This fraction is called bypass protein or undegradable intake protein (UIP). To increase bypass protein, feed can be heat-treated (like roasting soybean), or chemically treated (e.g., with formaldehyde). Bypass protein improves milk production, growth, and reproductive efficiency.

Quick Tip

Bypass protein = more milk yield = common question for nutrition!

4. Which hormone causes milk letdown in dairy cows?

- (A) Prolactin
- (B) Estrogen
- (C) Oxytocin

(D) Progesterone

Correct Answer: (C) Oxytocin

Solution:

Milk production and milk ejection are regulated by different hormones. Prolactin stimulates the alveolar cells to produce milk. Oxytocin, secreted from the posterior pituitary gland, causes contraction of myoepithelial cells around the alveoli, pushing milk into the ducts so it can be removed during milking. Estrogen and progesterone prepare the udder during pregnancy but do not cause milk letdown. Stress inhibits oxytocin release — that's why calm milking is essential.

Quick Tip

Prolactin = produce milk; Oxytocin = release milk. Don't mix these up!

5. Which hormone is used in estrus synchronization in cattle?

(A) Prolactin

(B) Prostaglandin F2

(C) Insulin

(D) Thyroxine

Correct Answer: (B) Prostaglandin F2

Solution:

Estrus synchronization is used to bring a group of animals into heat simultaneously. This makes planned breeding and AI possible. Prostaglandin F2 is commonly used because it causes the regression of the corpus luteum (CL) in animals that are in diestrus phase. When the CL regresses, progesterone drops and the animal returns to estrus within 2–5 days. Other protocols may use progesterone devices (like CIDR) or GnRH for timed AI programs.

Quick Tip

Prostaglandin = CL regression = synchronized estrus!

6. Which is an example of a molecular marker used in animal breeding?

- (A) Hemoglobin
- (B) SNP
- (C) Vitamin
- (D) Enzyme

Correct Answer: (B) SNP

Solution:

Molecular markers are identifiable DNA sequences used to locate genes linked with important traits. SNPs (Single Nucleotide Polymorphisms) are the most common and widely used markers in animal genetics. They help in Marker-Assisted Selection (MAS) to select animals with desired traits like higher milk yield or disease resistance. Other markers include microsatellites. These markers make selection more accurate than just physical appearance.

Quick Tip

Learn SNP and microsatellites — these buzzwords often appear directly!

7. Which disease is zoonotic?

- (A) Mastitis
- (B) Brucellosis
- (C) Foot rot
- (D) Bloat

Correct Answer: (B) Brucellosis

Solution:

Zoonotic diseases spread from animals to humans. Brucellosis is caused by *Brucella* species and spreads through infected milk, contact with aborted fetuses, or discharges. It causes undulant fever in humans. Control measures include testing animals regularly, culling infected ones, vaccination (e.g., S19 in calves), and strict hygiene. Farmers should always boil or pasteurize milk before consumption to prevent transmission.

Quick Tip

Brucellosis is the classic zoonotic question — test cull is key!

8. What is the crude protein (CP) level for broiler starter feed?

- (A) 16–17%
- (B) 18–19%
- (C) 22–23%
- (D) 25–26%

Correct Answer: (C) 22–23%

Solution:

Broiler chickens need high protein diets, especially during the starter phase (0–3 weeks) for rapid growth and muscle development. Starter diets contain about 22–23% crude protein and around 2800 kcal ME/kg. As the bird grows, protein needs reduce slightly: grower (20–21%), finisher (18–19%). Proper protein levels ensure faster weight gain and feed efficiency.

Quick Tip

Starter phase CP is highest — easy mark to remember.

9. Which is true about HTST pasteurization?

- (A) 63°C for 30 min
- (B) 50°C for 10 min
- (C) 72°C for 15 sec
- (D) 100°C for 5 sec

Correct Answer: (C) 72°C for 15 sec

Solution:

Pasteurization destroys harmful bacteria in milk without altering its taste or nutrition. The two main methods are: LTLT (Low Temperature Long Time) — heating milk at 63°C for 30

minutes in batches; and HTST (High Temperature Short Time) — heating milk at 72°C for 15 seconds using continuous flow systems. HTST is widely used in modern dairy plants because it is faster, energy-efficient, and preserves milk quality.

Quick Tip

LTLT = old batch; HTST = modern, faster, continuous!
