NATIONAL SENIOR CERTIFICATE EXAMINATION
NOVEMBER 2024

EQUINE STUDIES

MARKING GUIDELINES

Time: 3 hours 200 marks

These marking guidelines are prepared for use by examiners and sub-examiners, all of whom are required to attend a standardisation meeting to ensure that the guidelines are consistently interpreted and applied in the marking of candidates' scripts.

The IEB will not enter into any discussions or correspondence about any marking guidelines. It is acknowledged that there may be different views about some matters of emphasis or detail in the guidelines. It is also recognised that, without the benefit of attendance at a standardisation meeting, there may be different interpretations of the application of the marking guidelines.

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SECTION A

QUESTION 1

1.1 1.1.1 C
1.1.2 D
1.1.3 A
1.1.4 B

1.2 1.2.1 Acidic & enzymatic

1.2.2 Enzyme/Enzymatic

1.2.3 Bacterial / Microbia l/ Fermentation

1.3 1.3.1 A gland or a network of glands that produce and release hormones into the bloodstream, e.g. Insulin.

1.3.2 Glands that secrete substances through ducts. e.g. Digestive juices / enzymes / substances.

1.4 1.4.1 African Horse Sickness

1.4.2 West Nile virus

1.4.3 Equine Herpes Virus

1.5 1.5.1 Windgall/Windpuff

1.5.2 Thoroughpin

1.5.3 Curb

1.5.4 Bog Spavin

1.5.5 Capped Hock

1.5.6 Capped Elbow

1.5.7 Capped Knee/Carpitis

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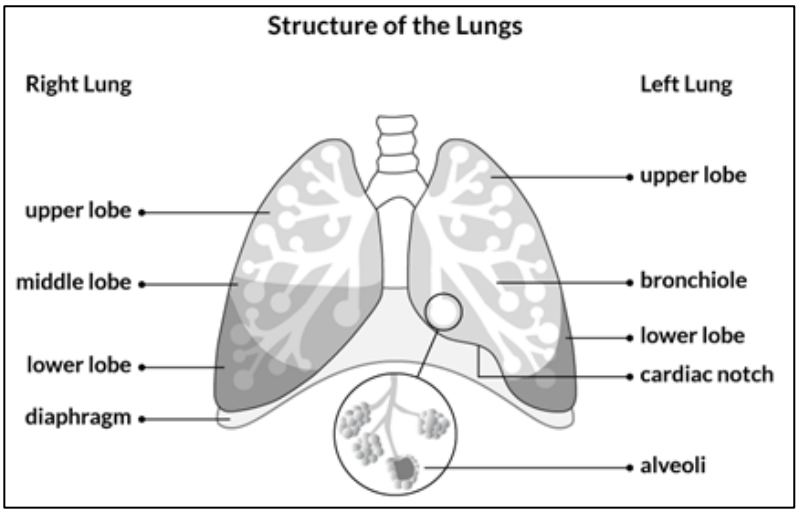
QUESTION 2

2.1



A: Trachea/Windpipe
B: Bronchus
C: Interstitial tissue/Lung Tissue
D: Diaphragm
E: Bronchioles
F: Alveoli

2.1.1 A diagram showing the lower respiratory system/lungs of the horse.

2.1.2 D: Respiration (Inhalation/Exhalation) During inhalation, the diaphragm contracts and flattens, increasing the volume of the thoracic cavity. This decrease in pressure allows air to be drawn into the lungs. During exhalation, the diaphragm relaxes and returns to its dome shape, reducing the volume of the thoracic cavity and forcing air out of the lungs. Will also accept: Support of Abdominal Organs, Stabilisation of the core during movement.

E: They carry air to and from the lungs, allowing for the exchange of gases (oxygen and carbon dioxide) or Bronchioles are lined with cilia, which help to move mucus and trapped particles out of the respiratory system. Or The bronchioles play a role in regulating airflow and directing air to different parts of the lungs.

F: Gas Exchange, blood air barrier.

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2.1.3 **Unsoundness of the Limb**

Problems related to the legs or hooves, such as arthritis, tendon injuries, or hoof diseases.
Examples: Lameness, navicular disease, laminitis.
Impact on Performance:
Reduced mobility and flexibility.
Decreased endurance and speed.
Increased risk of injury during work or competition.

Unsoundness of the Heart

Cardiac issues that affect the horse's cardiovascular system.
Examples: Heart murmurs, arrhythmias, valve diseases.
Impact on Performance:
Lower stamina and quicker fatigue.
Reduced ability to handle physical stress.
Potential risk of collapse or sudden death during intense activity.

Unsoundness of Sight

Vision problems that affect a horse's ability to see clearly.
Examples: Cataracts, uveitis, retinal detachment.
Impact on Performance:
Difficulty navigating obstacles and unfamiliar environments.
Increased anxiety and skittishness.
Higher risk of accidents and injuries.

Unsoundness of Wind

Respiratory issues that affect breathing and airflow.
Examples: Heaves (Recurrent Airway Obstruction), laryngeal paralysis, EIPH, DDSP
Impact on Performance:
Laboured breathing and reduced oxygen intake.
Decreased stamina and exercise intolerance.
Increased susceptibility to respiratory infections.
Or any other reasonable answer.

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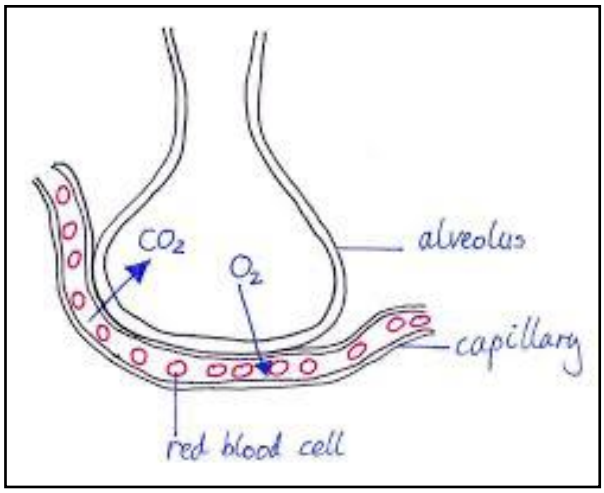
2.2



Alveoli & Gaseous Exchange

Alveolus
O_2
CO_2
Directional arrow 1
Directional arrow 2
Capillary
Red blood Cell

2.2.1 Laryngeal Hemiplegia / Roaring.

Symptoms:
Abnormal Respiratory Sounds: Audible roaring or whistling noises during strenuous exercise.

Exercise Intolerance: Horses may struggle to maintain stamina and performance levels.

Flaring Nostrils: An increased effort to breathe, often accompanied by flaring nostrils.

Reduced Athletic Performance: Decreased ability to perform at peak levels, especially in activities demanding aerobic capacity.

Causes:
Recurrent Laryngeal Nerve Dysfunction: Nerve damage affecting the innervation of the cricoarytenoid dorsalis muscle.

Idiopathic: In some cases, the exact cause may not be clearly identified.

Trauma: Injury to the recurrent laryngeal nerve during surgery or external trauma to the neck. High Intensity work; Conformation of neck; confirmation of head.

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Treatment Options:
Tie-Back Surgery: A surgical procedure (laryngoplasty) to permanently open the affected side of the larynx to improve airflow.

Laser Surgery: Minimally invasive procedures to address the dysfunction of the paralyzed vocal fold.

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SECTION B

QUESTION 3

3.1 3.1.1 Equine Influenza (Will accept Flu) & tetanus Vaccinations. (Proquenza & Proteqflu).

3.1.2 Within 6 months + 21 days / twice a year. / Tetanus Annual or deep wound.

3.1.3 When a horse is vaccinated, a small, harmless form of the disease agent or a component of it is introduced into the body. This prompts the immune system to recognise the foreign invader and mount a defensive response. The immune system produces specialised cells called antibodies which target and neutralise the disease agent, as well as memory cells, which 'remember' the invader for future encounters. If the vaccinated horse is exposed to the actual disease-causing organism in the future, its immune system can quickly recognize and mount a robust defence, preventing the development of illness. By stimulating the immune system to recognize and fight off specific pathogens, vaccinations help horses stay healthy and resilient in the face of infectious threats
Any 4 *The expectation is for a simple answer here that reflects the above*.

3.1.4 No, it does not have a primary course of Primary 1, Primary 2 21–90 days after Primary 1, Primary 3 within 6 months of Primary 2.

3.1.5 Only after 27th from the 28th, horse is not allowed to compete within 7 days of any vaccination. Over a year gap and no primary given after 06/17 & 07/18.

3.2 3.2.1 This food is low in starch & sugar, it is grain free, 8 % starch & sugar.

3.2.2 Oats, barley, maize, molasses. Grains

3.2.3 The feed contains vitamins and minerals. All nutrients.

3.2.4 500 /100 × 2.5 = 12.5 kg 60% of 12.5 = 7.5 kg of roughage 40% of 12.5 kg = 5 kg of concentrates = 4 days

3.3 12–14% + Protein concentrates
2.5% body weight = 400/100 × 2/5 = 10 kg
65/35, 50/50 or 60/40 = 5 kg roughage, 5 kg concentrates or 6 kg roughage, 4 kg concentrates per day
Clean fresh water available at all times
Electrolytes to replace for sweat in hot climate
Concentrates high in fat for energy
Lucerne Oathay
Vitamin & minerals balanced including calcium & phosphorus ration
Any other relevant points

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QUESTION 4

4.1 Regular dental check-ups play a crucial role in preventing episodes of choke in horses for several reasons. Firstly, dental issues such as sharp points, uneven wear, and dental malocclusions can impair proper chewing and swallowing increasing the risk of feed material becoming lodged in the oesophagus. By addressing these issues through routine dental examinations and corrective procedures such as floating the horse's ability to chew and swallow food effectively is restored, reducing the likelihood of choke incidents. Secondly, dental problems can lead to poor feed intake and altered eating behaviour which may predispose the horse to bolting feed or inadequate mastication both of which are risk factors for choke. Regular dental check-ups enable early detection and management of dental issues before they escalate, thus maintaining the horse's ability to consume feed in a safe and efficient manner. Dental care promotes optimal chewing which allows food to be mixed with saliva reducing the risk of choke. (any 4)

4.2 Recurrent choke may cause oesophageal damage affecting long-term swallowing
Chronic stress and pain can lead to behavioural issues and weight loss.
Increased risk of aspiration pneumonia poses serious health threats.
(Any 4)

4.3

Aspect	**Horse Choke**
Anatomy	Involves the oesophagus.
Causes	Dietary factors e.g., feeding dry hay or pelleted feed dental issues oesophageal dysfunction
Symptoms	Difficulty swallowing Not moving Increased TPR excessive salivation nasal discharge coughing neck extended
Action of the caretaker	Call the vet Remove food Remove water Monitor TPR Any other appropriate action

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4.4 Evaluate the horse's current diet and feeding practices to identify potential contributing factors to choke incidents such as feeding dry or coarse feed.

Transition the horse to a diet consisting of softer more easily digestible feed materials, such as soaked hay or hay cubes, to reduce the risk of obstruction. Implement feeding strategies to encourage slower eating and thorough chewing such as using slow-feed hay nets or multiple small meals throughout the day using large smooth stones in feeding bowl to prevent choking. Avoid feeding large quantities of feed at once, as this increases the risk of bolting and choke.

Provide ample access to clean, fresh water at all times to aid in digestion and prevent dehydration, which can increase the risk of choke.

Schedule routine dental examinations by a qualified equine dentist or veterinarian to identify and address dental issues that may impair chewing and swallowing function.

Monitor the horse's eating behaviour for signs of dental discomfort or difficulty chewing and address any issues promptly to maintain optimal dental health.

Collaborate closely with a veterinarian to develop and implement the management plan ensuring it addresses the horse's individual needs and medical history.

Schedule regular follow-up examinations to monitor the horse's progress and adjust the management plan as needed based on response to treatment and ongoing evaluation.

Make sure feed time is as peaceful as possible to reduce stress and there bolting feed.

4.5 Media Campaign: Equine Choke Awareness

Key Messages:
Equine choke is a serious condition requiring immediate vet attention.
Proper feeding practices and management can help prevent choke episodes.

Recognizing choke symptoms and knowing how to respond can save a horse's life

Target Audiences:
Horse owners including equestrians stable managers and veterinarians
Equine enthusiasts interested in horse care and welfare.
Agricultural and equestrian organizations, such as breed associations and riding clubs Charity/equine welfare organisations.

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Creative Content Ideas:
Educational infographics Visual guides explaining choke symptoms, prevention tips, and first aid procedures.
Video Demonstrations Step-by-step tutorials on proper feeding techniques and strategies to reduce choke risk.
Expert Interviews Conversations with equine veterinarians and nutritionists providing insights on choke prevention and management.
User-Generated Content Encouraging followers to share their own experiences with equine choke and preventive measures they employ.

Justification of Media Platforms:
Facebook Ideal for reaching a wide audience of horse owners and enthusiasts through informative posts, videos, and community engagement. Instagram Visual platform suitable for sharing eye-catching graphics, videos, and user-generated content to engage younger audiences. Newspaper available in most shops, radio accessible by all, etc.

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QUESTION 5

5.1 Bacteria: Mud fever (Dermatophilosis) Rain scald (Dermatophilosis), Greasy heel (Scratches), Dermatitis (Bacterial).
Fungus: fungal dermatitis, accept ear plaque accept ringworm. Accept secondary fungal infection accompanying Thrush
Viral; Equine viral papillomatosis (Warts) Equine sarcoidosis (Associated with bovine papillomavirus), Equine herpesvirus (EHV) dermatitis, Equine viral arteritis (EVA) skin lesions

5.2 The equine skin product with antibacterial, antifungal, and antiviral properties is super important for treating horse wounds. You see, infections can be a big problem with horse wounds, but this product tackles that head-on. It helps wounds heal faster and lowers the chances of getting other infections. Plus, it's got this hydrogel stuff that makes wounds stay moist and helps clean out all the gunk. So basically, it's like a one-stop-shop for taking care of horse wounds. It's a real game-changer for horse health. Any 2 relevant points that tie into it being an advancement in the field.

No, as no testing stated.

5.3 1 Melanomas: These are a big deal for horses because they can turn into cancer and spread to other parts of the body. If they get bad, they can make a horse really sick and hurt their performance.

Any ranking accepted as long as sound justification given

2 Mud fever: It's not fun for horses to have, but it usually goes away with some TLC. It can make them sore and itchy for a while, but as long as we take care of it, they should be okay in the long run.

3 Sweet itch: This one can make horses really itchy, but it's usually not too serious. If we catch it early and give them the right treatment, they should be back to their old selves pretty quickly.

4 or 5 Urticaria (Hives): This can make horses uncomfortable for a little while, but it usually goes away on its own. If we give them some medicine to help with the itching, they'll be feeling better in no time.

4 or 5 Warts (Papillomas): These are just annoying lumps that don't really bother horses too much. They might not look great, but they're usually harmless and don't affect how a horse performs.
Order for 5 marks.

Justification:
We ranked these skin conditions based on how much they can affect a horse's health and performance. Melanomas and sarcoids are at the top because they can cause a lot of pain and health problems. Mud fever and sweet itch come next because they can make horses uncomfortable, but they usually go away with the right care. Urticaria is next because it's temporary and not too serious, and warts are at the bottom because they're mostly just annoying and don't cause much trouble. Hives & warts can be swopped for various reasons in the ranking. The reasoning must be sound.

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5.4 Urticaria in horses can be a tricky thing to deal with. One big challenge is that it doesn't always look the same in every horse. Some might have big red welts, while others might just have a few small bumps. This makes it hard for vets to know for sure if it's urticaria or something else.

Another problem is that urticaria can sometimes be mistaken for other skin issues. It's kind of like trying to solve a mystery – you have to rule out all the other suspects before you can be sure who the culprit is.

So, vets have to be really careful and do a lot of tests to make sure they're diagnosing it right. And even when we know it's urticaria, treating it can be a bit of a puzzle too. What works for one horse might not work for another, so it's a bit of trial and error sometimes. Plus, there's always the worry that it might come back again, especially if we don't know what caused it in the first place.

In the end, dealing with urticaria is like trying to solve a tricky riddle. It takes patience, careful observation, and a bit of detective work to figure it all out.

5.5 **Figuring Out How the Diseases Spread (2 marks):**
First, we need to see how likely it is for the diseases to spread between the horses. Both papilloma and equine influenza can spread quickly, especially when horses are close together. So, we have to be careful about how we keep them apart.

Seeing What We Have to Work With (2 marks):
We also need to think about what we have available. Financial considerations. Since the stud farm doesn't have a lot of money, we can't go for fancy solutions. We have to be smart and use what we have in a good way.

Thinking About How the Horses Feel (2 marks):
It is really important to think about how the horses are doing. Welfare. Being stuck in isolation can be really stressful for young horses, and it might make their health worse. We need to make sure they have everything they need to feel okay while they're isolated.

Making a Plan for Isolation (2 marks):
Based on what we know about how the diseases spread, what resources we have, and how the horses might feel, I think it's best to put each sick horse in its own stall. Isolation. This way, they won't be able to spread the diseases to each other. At the same time, we need to be really careful about cleaning and not letting anyone else near the sick horses. We also need to check on them a lot to make sure they're not getting worse.
Or any similar reasonable answer that takes horse welfare and disease containment into account with relevant justification.

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QUESTION 6

6.1 Breeders often choose to clone horses to preserve valuable bloodlines especially when a superior or highly valuable horse has died or been gelded and cannot produce offspring.

6.2 The cloning process involves taking a tissue sample from a horse transferring the DNA-containing nucleus of a cell into a recipient egg with its DNA removed, and then implanting the egg into a recipient mare to be carried to term. any 3

6.3 Cloning is prohibited in the thoroughbred industry to maintain the integrity of bloodlines and prevent the proliferation of identical genetic material, which could impact the diversity of the breed.

6.4 I might consider cloning a horse if it had exceptional qualities or if it belonged to a rare or endangered breed that needed genetic preservation.

6.5 The first step with Gemini Genetics costs R11 500 + R280 + 27 600 + VAT for preserving cells while ViaGen's cloning procedure costs around R1 615 000 Gemini Genetics has additional monthly storage fees and the overall cost for ViaGen varies by species or any reasonable comparison.

6.6 If tissue samples are not taken promptly after a horse's death, the chances of successful preservation decrease and the condition of the deceased horse must be optimal to ensure viable biopsy samples deformed foal. any 2

6.7 Answers may vary, but an acceptable response might include considerations of the importance of genetic diversity the potential benefits of preserving rare breeds and ethical concerns surrounding cloning.

Response emphasising genetic diversity:
'I strongly support the use of cloning for preserving rare and endangered breeds because it contributes to maintaining genetic diversity within these populations. Genetic diversity is crucial for the overall health and resilience of a species, and cloning offers a valuable tool to prevent the loss of unique genetic traits.'

Response highlighting ethical concerns:
'I am sceptical about the use of cloning for preserving rare and endangered breeds due to significant ethical concerns. Cloning raises questions about animal welfare, potential exploitation, and the creation of genetically identical individuals. There is a need for thorough ethical considerations and regulations to ensure the well-being of the cloned animals and prevent unintended consequences.'

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6.8 Cloning horses for sport and breeding sounds cool at first, but there are some serious ethical questions we need to think about.
One big issue is whether it's fair to the cloned horses. They didn't choose to be made, so is it right to expect them to perform in competitions or be used for breeding? It's kind of like playing with someone's life without asking them if they want to be involved.

Another thing to consider is the impact on genetic diversity. If we start cloning lots of horses, we could end up with a population that's all too similar genetically. That's not good for the long-term health of the horse population because it makes them more vulnerable to diseases and other problems.
So, while cloning might seem like a cool idea, we need to think carefully about whether it's really the right thing to do for the horses and for the future of the sport.

6.9 Guidelines might include restrictions on cloning for specific purposes, consideration of animal welfare, and transparency in the reporting of cloned animals. Acceptable responses should reflect a thoughtful approach to ethical considerations in horse cloning.

An example of some guidelines:
Purpose Restrictions:
Cloning should only be permitted for purposes related to the preservation of rare and endangered breeds, genetic diversity, or the continuation of valuable bloodlines. Cloning for purely commercial purposes or entertainment should be strictly regulated.

Animal Welfare Standards:
Strict adherence to animal welfare standards must be maintained throughout the cloning process. This includes ensuring that the cloned animals experience a high quality of life, free from unnecessary suffering. Regular veterinary checks and monitoring should be mandatory.

Transparency and Traceability:
All instances of horse cloning should be transparently documented, and information about the cloned animals, their origins, and any associated health or performance data should be made publicly available. This transparency is essential for accountability and traceability.

Education and Informed Consent:
Breeders and horse owners involved in cloning should undergo comprehensive education regarding the ethical, moral, and welfare considerations associated with cloning. Informed consent, both from the owner and the surrogate mare, should be obtained before initiating the cloning process.

Genetic Diversity Impact Assessment:
Before cloning for preservation purposes, a thorough assessment of the potential impact on genetic diversity within the breed should be conducted. This evaluation should consider the long-term consequences and whether alternative conservation methods might be more appropriate.

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Regulation of Cloning Companies:
Cloning companies should be subject to strict regulations to ensure responsible practices. This includes monitoring the use of cloning technologies, adherence to ethical standards, and regular audits to confirm compliance with established guidelines.

Research and Development Ethics:
Ethical considerations should be at the forefront of any research and development related to cloning technologies. Any experimentation or innovation in cloning processes should prioritise the welfare of the animals involved and adhere to ethical standards.

Total: 200 marks

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