NATIONAL SENIOR CERTIFICATE EXAMINATION
NOVEMBER 2020

EQUINE STUDIES

MARKING GUIDELINES

Time: 3 hours 200 marks

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SECTION A

QUESTION 1

1.1 A 2 or 5 ✓
B 1 ✓
C 4 ✓
D 3 ✓ (4)

1.2 Choose TWO of the respiratory conditions in question 1.1

1.2.1

condition	signs
A. Laryngeal hemiplegia	Roaring, inspiratory noise when under exercise, ✓ fatigue during work. ✓
B. Dorsal displacement of the soft palate	Inspiratory noise when displaced – often towards end of race. ✓ Sometimes associated with swallowing, fatigue during work. ✓
C. Recurrent airway disease	Chronic cough, ✓ heave line, ✓ expiratory wheeze, poor doer.
D. Exercise-induced pulmonary haemorrhage	Fatigue during exercise, ✓ epistaxis 30 min after intense work (not always seen). ✓

(4)

1.2.2 Low-dust bedding like newspaper, ✓ soak hay and wet feed, ✓ groom outside of stable, ✓ live out, ✓ keep dusty areas irrigated ✓ (4)

1.3 Furosemide ✓ (1)

1.4 Head and neck extended, ✓ elbows turned out, ✓ increased respiratory effort, ✓ increased or decreased respiratory rate, ✓ respiratory noise, ✓ mucous cyanotic, ✓ collapse, ✓ death. ✓ (any 6) (6)

1.5 Nostrils, ✓ sinuses, ✓ turbinates, ✓ pharynx, ✓ larynx, ✓ trachea, ✓ bronchi, ✓ bronchiole, ✓ alveolar duct, ✓ alveolus ✓ (10)

1.6 growth/polyp/neoplasia, trauma, guttural pouch mycosis. (any 1) (1)

1.7 Separate stable, ✓ separate feed bins, buckets, grooming kit, etc, ✓ no contact with other horses, ✓ preferably sufficiently far away that disease is not spread through air, ✓ quiet area for recovery with low foot traffic to avoid contamination, ✓ close enough to be able to check and treat easily, ✓ checklist of what precautions must be taken. ✓ (any 5) (5)

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QUESTION 2

2.1 Diagram showing ✓ the cardiovascular system ✓ of the horse ✓ (3)

2.2

A – right atrium ✓	B – left atrium ✓
C – left ventricle ✓	D – right ventricle ✓
E – mitral / bicuspid valve ✓	F – pulmonary / semilunar valve ✓
G – aortic / semilunar valve ✓	H – tricuspid valve ✓

(8)

2.3 Diastolic is the relaxation phase ✓ when the heart is filling, ✓ Systolic is the contracting phase ✓ when blood is being pumped out the heart. ✓ (4)

2.4 28 – 42 bpm ✓✓ (2)

2.5 A heart murmur is when a heart valve does not close completely ✓ causing blood to leak backwards along the pressure gradient ✓ resulting in decreased forward flow of blood causing a horse in work to fatigue ✓ prematurely. It could even cause syncope which poses a danger to a rider. ✓ (4)

2.6 Gaseous exchange ✓ (1)

2.7 The lymphatic system is a system of blind-ending tubules ✓ that are closely associated with veins. ✓ It is a low-pressure system ✓ that transports and filters lymph ✓ from around cells in the body through lymph nodes ✓ and returns filtered fluid into the blood ✓ at the subclavian vein. ✓ (7)

2.8 Stocking up is fluid accumulation in the lower legs ✓ often seen after stable rest at night ✓ which rapidly corrects as the horse is turned out and increases movement. ✓ Lymphangitis is also swelling of a leg, often due to an untreated cut on the leg ✓ where the bacteria enter the lymph vessels causing inflammation and infection ✓ in the lymphatic system which stops this drainage system from working, causing painful hot swelling of the leg which needs medical treatment. ✓ (6)

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70 marks

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SECTION B

QUESTION 3

3.1 Horse 1 ✓ and 3 ✓ as their egg counts after deworming did not drop significantly. ✓ (3)

3.2 Dewormer spat out/not given, ✓ incorrect amount given/incorrect weight determined, ✓ wrong dewormer for type/stage of worm given, ✓ expired stock. ✓ (any 3) (3)

3.3 1 and 3 ✓✓ as both have resistant worms, ✓ would have picked these up and shared them on the same pasture, ✓ none of the other horses have resistant worms therefore in different paddock. ✓ (5)

3.4 Below 300 EPG ✓ are usually not treated ✓ (2)

3.5 The zero could have been an error ✓ or old dung sample given ✓ or there were no adults laying at the time of collection ✓ but started laying with second collection. ✓ (4)

3.6 When encysted ✓ there are no adults in the gut ✓ to lay eggs. ✓ (3)

3.7 Moxidectin ✓ as it is effective and a once-off dose. ✓ OR Panacur five-day course ✓ if never dewormed before and you suspect a high worm load, safer to slowly kill off worms. ✓ (2)

3.8 Praziquantel ✓ as it is only effective against tapeworms and you should deworm for tapeworm in autumn ✓ and as no other worms were detected in numbers large enough for treatment, no other dewormer is needed. ✓ Tapeworms are not detected on faecal egg float. (3)

3.9 Pros to stabling horse: can monitor dropping ✓ and side effects for each individual horse, ✓ no anthelmintic is deposited onto the field – potentially toxic to earthworms, fish and other beneficial organisms. ✓ Cons to keeping horse stabled: change in routine and less exercise and no fresh grass/ grazing may lead to colic, ✓ stabled horse may be fresh and dangerous to ride without the outlet of the paddock. ✓ (any 2 each) (4)

3.10 It is very important to keep accurate records so you can see which horses have worms ✓ and how they are being managed by looking at trends over time, ✓ and how the yard as a whole is being managed. ✓ If one horse is showing resistance to deworming this can easily be seen with records and addressed appropriately, ✓ you record what horse got which dewormer for invoicing enquiries and in case of an adverse reaction to the dewormer. ✓ (5)

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QUESTION 4

4.1 Henneke system ✓ (1)

4.2 Inflammation of the sensitive and insensitive lamina ✓ in the hoof ✓ leading to lameness, ✓ typical stance, ✓ sinking and rotation of the pedal bone due to loss of integrity of the lamina. ✓ (any 4) (4)

4.3 Avoid high-sugar and -starch feeds and lush green grass ✓ by decreasing concentrates and limiting grazing/turnout, ✓ feed oils instead of concentrates ✓ if extra calories are required, ✓ good quality hay with balancer ✓ to ensure all nutrients available for healing, ✓ soak hay to remove sugars (controversial), ✓ probiotics, ✓ ad-lib water. ✓ (any 6) (6)

4.4 Restrict concentrates, ✓ rather feed hay with straw (cautious with old horse's teeth) ✓ to restrict calories, avoid lush pastures, ✓ use grazing muzzle or reduce turnout time. ✓ Increase exercise slowly ✓ be careful with joint wear and tear and ligament strain in obese horses, ✓ start slowly, increase time before increasing intensity of work. ✓ (any 7) (7)

4.5 The pancreas exocrine function is to add pancreatic juice/ enzymes ✓ into the duodenum to assist with digestion. ✓ These enzymes include trypsin and chymotrypsin to digest proteins; ✓ amylase for the digestion of carbohydrates; ✓ and lipase to break down fats. ✓ The endocrine component of the pancreas consists of islet cells (islets of Langerhans) ✓ that create and release important hormones directly into the bloodstream. ✓ Two of the main pancreatic hormones are insulin, ✓ which acts to lower blood sugar, ✓ and glucagon, ✓ which acts to raise blood sugar. ✓ Maintaining proper blood sugar levels ✓ is crucial to the functioning of key organs including the brain, liver, and kidneys. (10)

4.6 Cushing's disease ✓ (1)

4.7 Increased drinking and urinating (PU/PD), ✓✓ top line muscle loss, ✓ pot belly, ✓ curly hair coat (hirsutism) ✓ (any 4) (4)

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QUESTION 5

5.1 This is our AHS (African Horse Sickness) peak season ✓ when confirmed cases near you or in surveillance area ✓ may prevent or delay the export of horses. ✓ (3)

5.2 Up-to-date legal passport, ✓ health certificate, ✓ movement permit. ✓ (3)

5.3 5.3.1 Feed less on rest day after competition, ✓ or turn out/walk out on day of rest. ✓ Feed less starch / more oil. (2)

5.3.2 With next exercise after rest becomes stiff as exercise progresses. ✓ May sweat, become anxious and get myoglobinuria. ✓ (2)

5.4 High concentrate to roughage probably 40:60 ✓ with a 14% protein feed, ✓ this is for the intense hard work ✓ and to repair tissues micro damaged during training and building muscle. ✓ Best quality roughage and feed, ✓ Electrolytes before and after race will assist to replace what is lost in sweat, ✓ probiotics to help digest food efficiently, ✓ oil to increase slow release energy, ✓ hoof supplements as long distances need healthy strong hooves, ✓ ulcer supplements as high concentrate and work with high stress from competition could cause EGUS, ✓ ad-lib fresh clean water. ✓ (10)

5.5 You would move from southern hemisphere summer ✓ to a northern hemisphere winter ✓as horses cycle during longer daylight hours she will probably go out of season ✓ but start cycling again as soon as it is summer again. ✓ She may need a season to adjust. ✓ (4)

5.6 All adult teeth, ✓ seven-year hook, ✓ tushes out if present in a mare, ✓ angle of incidence upright, ✓ no Galvayne's groove – only from 10 years, ✓ infundibulum and dental stars on tooth table. ✓ (any 5) (5)

5.7 Symmetry between left and right hoof, ✓ symmetry between medial and lateral side, ✓ no flares, ✓ heels equal heights, ✓ correct size for size of horse, ✓ correct angles, ✓ correct toe and heel length and angle. ✓ (any 4) (4)

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100 marks

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SECTION C

QUESTION 6

6.1 Cantharidin ✓ (1)

6.2 2 – 3 grams ✓✓ (2)

6.3 Gastrointestinal mucosa (including the mouth), ✓ renal, ✓ bladder ✓ and the heart muscle ✓ (4)

6.4 Vesicant. ✓ (1)

6.5 Treat the symptoms; so, if horse has diarrhoea, treat that ✓ as you can't get rid of the toxin. ✓ (2)

6.6 Horses have more access to lucerne, ✓ sheep and cows usually just on grazing, ✓ sheep and cows are ruminants ✓ not simple stomach like the horse ✓ which may affect toxin absorption. ✓ (any 2) (2)

6.7 Watch for swarms, ✓ if seen do not harvest, ✓ find chemical or biological control for the beetle, ✓ grow and harvest when conditions are not good for the beetle. ✓ (any 3) (3)

6.8 Beetles live in specific climates where lucerne grows best too, ✓ possible food source in lucerne as opposed to hay ✓ as hay is grass and lucerne is a legume. ✓ (3)

6.9 Different weather conditions keep numbers lower ✓ different genus possibly less toxic ✓ different methods of harvesting ✓ smaller farms/areas under lucerne limit beetle numbers. ✓ Any other reasonable answer. e.g. lucerne is expensive and therefore not many horses in South Africa are fed lucerne. (4)

6.10 Must argue for and against both with sound reasoning then choose one side. (8)

30 marks

Total: 200 marks

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