



NATIONAL SENIOR CERTIFICATE EXAMINATION
NOVEMBER 2019

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.

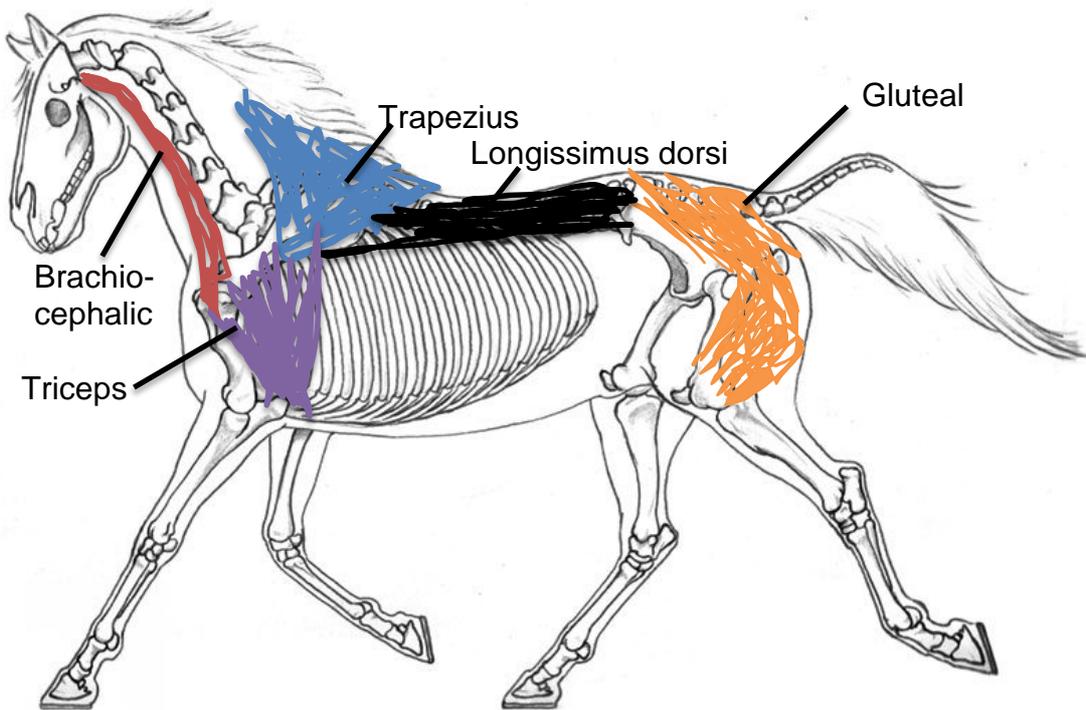
The IEB will not enter into any discussions or correspondence about any marking guidelines. It is acknowledged that there may be different views about some matters of emphasis or detail in the guidelines. It is also recognised that, without the benefit of attendance at a standardisation meeting, there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

SECTION A**QUESTION 1**

- 1.1 A – 2
B – 6
C – 1
D – 4
E – 3 or 7
- 1.2 1.2.1 **Senecio** – affects intestine, liver, nerves and skin, causing diarrhoea, colic, weight loss, icterus, staggers, sun sensitivity
Datura – inhibits parasympathetic system, causing impaction colic, dilated pupils, blindness, seizures, diaphragm paralysis, ataxia
Mienie-mienie bean – colic, bloody diarrhoea, fever, skin itching and irritation
Monkey rope – ataxia, seizures, torticollis
Bracken fern – depression, ataxia, blindness, head and neck up and backwards, convulsions, trembling
Blue green algae – diarrhoea, dehydration, colic, liver failure, photosensitivity, seizures
Thorn apple – ileus, colic, ataxia, convulsion, blindness

(any two plants two marks each, only have to include two symptoms to be awarded the marks)
- 1.2.2 Oil coats intestine to avoid absorption of toxic principle and purges intestines of toxin so less contact time for absorption.
- 1.2.3 Large amount required to be effective, won't get in enough and horse does not like taste, if force horse it may get it into the lung may cause pneumonia.
- 1.3 1.3.1 Occupational Health and Safety
1.3.2 Pay as You Earn
1.3.3 Value added tax
1.3.4 Unemployment Insurance Fund
1.3.5 Compensation for Occupational Injuries and Diseases Act

QUESTION 2



- 2.1 Each muscle given 3 marks: correct area and label, correct origin, correct insertion.
- 2.2 Decreased hock action with little impulsion, working on the forehand and will not track up (lack of collection)
- 2.3 trauma/pain, lack of use, nerve damage, incorrect riding/schooling
- 2.4 Hill work, pole work, collection (ride from behind) physiotherapy

QUESTION 3

- 3.1 Atlas C1; Axis C2
- 3.2 C1 or cervical
- 3.3 Skull Shows most lateral movement, cervical vertebrae lateral movement increases till C6 where most lateral movement is seen of all vertebrae, it then slowly decreases, least amount of lateral flexion over withers and lumbar area mid thorax show small amount of lateral flexion.
- 3.4 A nodding "yes" movement up and down
- 3.5 cervical vertebrae

- 3.6 Kissing spine usually seen between T 14 – 16. According to graph this shows least movement of spine in this area, usually due to change in direction of dorsal spinal process which is not represented in the graph.
- 3.7 Check saddle – may be causing back pain and lordosis if ill fitting, weight of rider – too heavy causes lordosis and increased impingement of spine, no rest/ keep in work keep muscles strong to work correctly, ride with back rounded up supported by core and abdominal muscles to increase space between spines.

SECTION B**QUESTION 4**

- 4.1 4.1.1 1st month: appetite loss as 31/36 (86%) horses improved
2nd month: BCL as 31/37 (84%) horses improved and appetite loss was now 29/36 (80%)
Overall, dung softening improved in 10/11 horses (91%)
- 4.1.2 Needs longer than one month to show effect, colic due to reasons other than ulcers, larger research group may have shown more change.
- 4.1.3 Little access to pasture, most time in the stables means acid often in contact with empty stomach wall causing erosions, high stress environment stress releases cortisol predisposing horse to stomach ulcers, high concentrate low roughage, partially empty stomach for many hours per day concentrate quickly digested and makes for more acidic environment, low roughage means low pH as no buffering or protective fibrous mat takes place, gastric acid production continuous, means acid often in contact with empty stomach wall causing erosions, high intensity exercise on empty stomach causing splashing of acid on lining of stomach.
- 4.1.4 (a) Saliva buffers acid especially on the top surface mat that suppresses splashing of acid in the stomach.
- (b) Saliva flow increases with molar pressure with eating therefore increase the amount of hay fed as this requires the most amount of molar pressure to chew.
- 4.1.5 pawing, rolling, grinding teeth, looking at stomach, sweating, restless, anorexic, decreased little to no droppings passed, increased heart rate, increased or decreased gut sounds. Moaning or groaning (any 7)
- 4.1.6 lack of water, poor teeth, poor quality hay, parasites, eating sand, sudden change in diet (any 4)
- 4.2 4.2.1 hydrochloric acid is continually secreted from the stomach to denature the proteins present in the feed. The enzyme pepsinogen is excreted in an inactive form it is activated to pepsin by HCL and this pepsin starts protein digestion.
- 4.2.2 Mechanical and bacterial digestion Mechanical is the physical breakdown of feed into smaller particles that increase the surface area for further enzymatic digestion. Bacterial digestion occurs in the hind gut. Microbe in the caecum breaks down indigestible fibre by fermentation into volatile fatty acids which are absorbed and used for energy.

QUESTION 5

5.1 5.1.1 Increased speed causes increased potential for vascular damage therefore the body prepares itself to correct any potential bleeds.

5.1.2 Horses pre-empt racing day causing increased adrenalin and stress, this may in itself increase platelet count, spleen contraction will disperse stored blood which may increase platelet numbers.

5.1.3 Exercise induced pulmonary haemorrhage / bleeders / epistaxis

5.2

	Gastric ulcers	Colic	Acute diarrhoea
Two signs	Weight loss, change in behaviour, pain after eating, grinding teeth, etc.	Pawing, looking at flank, sweating, restless, anorexic, etc.	Watery stool, painful abdomen, dehydration, anorexic, etc.
One cause	High concentrate low roughage, management, stress, high work	Dehydration, poor quality hay, change of diet, worms, etc.	Bacteria, virus, fresh grass, etc.
Part of GIT	stomach	stomach, SI, LI	SI, LI
Impact on part of GIT	Damage to lining of stomach, red lesions, painful when acid touched thinned mucosa.	Death of tissue due to lack of blood supply, impaction twisting, gas expansion, etc.	Inflammation of lining of small and/or large intestine, decreased absorption of fluids or increased production of fluids.
Initial treatment	Call vet, Omeprazole/omeprocoat, herbal ulcer remedies, diet change	Call vet, remove concentrate, painkillers	Call vet, keep horse and stable clean, remove concentrates, ensure fresh clean water available, probiotics/prebiotics
Prevention	Change management, increase roughage, decrease training and stress	Deworming, change feed slowly, ensure fresh clean water available, good quality roughage, dental up to date, etc.	Keep utensils clean, pre/probiotics, limit sudden increase in lush grazing, change food slowly, etc.

5.3 Palatability is the taste of the feed and how well the horse eats it. Digestibility is how easily the feed is broken down in the intestine to release energy by the horse.

5.4 salt / molasses

5.5 Must discuss a feeding board/chart, discuss named/numbered feed bins/covers, transport to stables in wheelbarrow, etc. possible more than one feed room, work in order, double check before sending out, field horses fed apart and watched, remove problem horses or slow eaters, more than one person to feed, wear hats, bring into stalls in shift, any other reasonable answers.

5.6

A	Introduce hand grazing for short periods, small amounts of wet hay often, concentrates only added slowly once eating hay well and passing droppings, if on box rest not back to previous amounts pre/probiotics.
B	Ad lib fresh clean water, needs increasing energy to produce milk as foal grows and drinks more milk, change feed according to BCS
C	High concentrate 14 – 16%, 550:50 concentrate to roughage ratio, small meals often, best quality feed, ulcer medication.
D	Depending on BCS just roughage and grazing otherwise good quality protein to keep muscle mass up, not high percentage protein as can put strain on kidney and liver. Check teeth, may need easily digestible feed, oil, pre/probiotics.
E	Should be on high roughage low concentrate, increase concentrate amount and protein/energy% with workload, slowly, watch behaviour and BCS.
F	Restrict grazing with limited turnout or grazing muzzle, soak hay, low to no concentrates, possibly balancing supplement if no concentrate.

5.7 Metabolism; example of a TB (hot blood) and a draft (cold blood) where the draft is large but keeps on weight with a small amount of feed due to slow metabolism, and the TB that is smaller but needs high amounts of feed to keep weight on due to higher metabolism.

5.8 High concentration CO₂ in muscles diffuses down concentration gradient to low CO₂ concentration in plasma, goes to lungs where high concentration in plasma diffuses to low concentration in alveoli, breathed out.

QUESTION 6

- 6.1 Retained placenta, increased green grass or grain intake, diarrhoea, drugs, increased weight bearing on one foot, increased concussion of foot (any four)
- 6.2 Founder
- 6.3 WBC help fight infection by attacking and engulfing foreign bodies and bacteria helping the body to localize and destroy any infection, reparexin inhibits them moving into tissues and therefore the infection may spread easier and become worse.
- 6.4 Increased toe length will put increased pressure on the laminae causing stretching from the white line up causing inflammation and possibly laminitis.

SECTION C**QUESTION 7**

- 7.1 African Horse Sickness is a viral disease that affects horses' vascular system that is transmitted by the culicoides midge.
- 7.2 7.2.1 Bacteria, yeast and eggs. In living systems.
- 7.2.2 Tobacco plants
- 7.2.3 Live but weakened virus
- 7.2.4 Virus like particles
- 7.2.5 possible signs of AHS/viraemic horse, cause outbreak
- 7.2.6 no effect just antibodies produced, no chance of outbreak
- 7.3 No, no vaccine is 100% effective, many horses are not vaccinated in rural areas, zebras endemically harbour the virus so there is always a pool of circulating virus in Africa. There are 9 strains and this is only a vaccine for one strain.
- 7.4 Once injected the vaccine causes the horse's immune system to respond to the antigen that looks like/has the same protein markers as the live virus or bacteria. The body produces antibodies that will work against the antigen. Some antibodies are stored as memory cells so when the horse is exposed to the real disease the body can quickly respond and attack the virus/bacteria.
- 7.5 Must argue for and against and then form their own opinion e.g. unethical if vaccine doesn't work and horse gets AHS, suffers and dies, if vaccine does work however it will mean many more horses will survive AHS in the future. If the horses used are treated with highest medical attention and care or humanely euthanised to prevent suffering in the case where the horse contracts AHS, I am for testing this vaccine. Etc.
- 7.6 Export will become easier, quarantine would be shorter and from many stations around the country not just the cape. Other countries will be happier to accept our horses as if there is an outbreak they can use the vaccine without the possibility of an outbreak. Economically it would be good for our race and endurance industry as well as for other competitors who wish to compete overseas.

Total: 200 marks