



NATIONAL SENIOR CERTIFICATE EXAMINATION
NOVEMBER 2017

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 Match the pictures in Column A to the correct skin condition in Column B. Write only the number and correct letter in the Answer Book.

- 1. H
- 2. C
- 3. B
- 4. F
- 5. G

1.2 Describe the following terms:

- (a) Wobbler syndrome: impingement of spinal cord by cervical vertebrae causing weakness and incoordination in the hind limbs.
- (b) Lymphangitis: infection and inflammation of the lymphatic vessels of the leg.
- (c) Anaerobic respiration: production of ATP in the absence of oxygen.
- (d) Miller's disease: disease from eating unbalanced bran diet causing bones to soften and enlarge.
- (e) Windgalls: small swellings on the pasterns.

1.3 1.3.1 Give the number that corresponds to the following tendon and ligaments:

- (a) (3) Superficial digital flexor tendon
- (b) (5) Suspensory ligament
- (c) (4) Deep digital flexor tendon
- (d) (6) Common digital extensor tendon
- (e) (1) Proximal check ligament
- (f) (2) Distal check ligament

1.3.2 Keep horse still or in stable to prevent further damage to tendon, hose and ice tendon to reduce swelling, bandage leg to immobilize leg and tendon.

1.3.3 Consider the following table and answer the questions below.

- (a) 6%
- (b) Loading at walk and slow trot speeds
- (c) Galloping and jumping, excessive loading (fall)
- (d) This is to indicate spring or elastic rebound and the zigzag structure of the tendon fibrils.

QUESTION 2

- 2.1 2.1.1 10 p.m.
- 2.1.2 Between 7 pm and 7 am as this is when the highest percentage of foals are born and you may have more than one foal being born at the same time.
- 2.1.3 $56/201 = 28\%$
- 2.1.4 Horses are prey animals and feel more secure at night when no predators are hunting it also gives the foal time to find its legs.
- 2.2 Study the graph showing mares ovulating and answer the following questions.
- 2.2.1 February
- 2.2.2 End August till mid-December
- 2.2.3 Increased daylight hours, increased warmth and increased nutrition.
- 2.2.4 The highest % mare ovulating occurs after stud season is finished/ended.

QUESTION 3

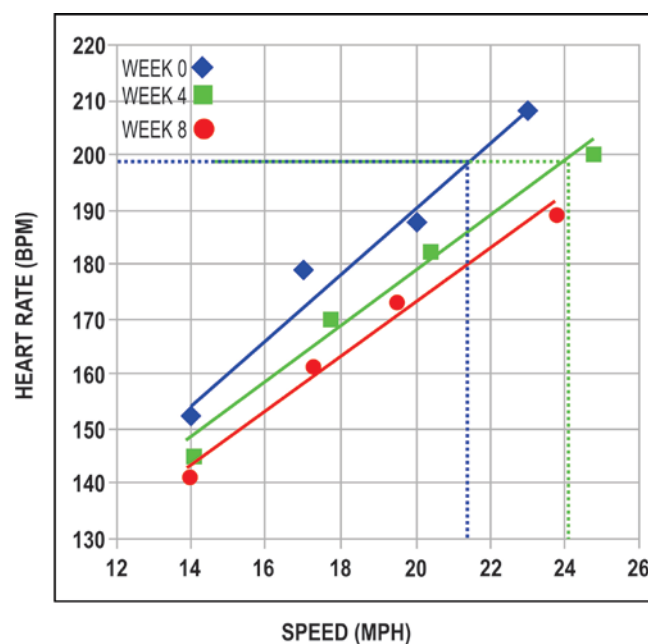
- 3.1 Adrenal gland
- 3.2 Cortisol
- 3.3
- Anterior pituitary gland stimulates adrenal gland.
 - Adrenal gland produces cortisol.
 - Increased cortisol **does not inhibit** activity of anterior pituitary gland.
 - Anterior pituitary gland is not responding normally as it is a growth.
 - Cortisol accumulates/concentration increases.
- 3.4 Any 3
Curly hair coat, polydipsia, polyuria, pot belly, thin skin, muscle wastage.

QUESTION 4

- 4.1
 - 1. Larvae develop into adults and lay eggs
 - 2. Eggs pass out in faeces
 - 3. Eggs develop into larvae
 - 4. Larvae wait on grass
 - 5. Horse eats grass and larvae
 - 6. Larvae migrate into large intestinal mucosa
- 4.2 Cyathostome
- 4.3 Panacure for 5 days, moxidectin
- 4.4 They release toxins, in large numbers this poisons the horse's system and the horse becomes ill.

SECTION B**QUESTION 5**

- 5.1 Lower respiratory system of the horse.
- 5.2
1. Trachea
 2. Bronchus
 3. Bronchioles
 4. Pleura
 5. Diaphragm
 6. Alveoli
- 5.3 Function to remove CO₂ waste and inhale oxygen for the body, barrier to airborne particles and disease.
- 5.4 Any two appropriate diseases, e.g.: Equine influenza, Pneumonia, bronchitis, pleuritis.
- 5.5 10–15 breaths per minute.
- 5.6
- 5.6.1 The ability to complete the required amount of physical activity without fatigue, stress, or injury.
- 5.6.2 Interval training consists of repeated spells of exercise interspersed with periods of rest, in which the horse is allowed to slow down and almost recover its pre-work pulse rate, before going on to the next interval of faster work.
- 5.6.3 (a) A graph showing the relationship between speed and heart rate over 0, 4 and 8 weeks of interval training.



Plotting correct, heading, three curves, line of best fit, key
 wrong (0) colour
 partially right symbols
 right different line

- (b) With time the horse's heart rate decreases as its speed increases.
- (c) Time taken for post exercise heart rate to return to resting rate.
- (d) Stethoscope, heart rate monitor, feel pulse.

5.6.4 Lungs take in oxygen absorbed into bloodstream taken up by haemoglobin transported to the muscles to provide energy.

5.7 5.7.1 DDSP prevents the horse from taking in enough oxygen so the horse tires quickly.

5.7.2 Roaring

5.8 Gallop: right hind, left hind, right fore, left fore, suspension, during suspension legs are tucked up under the horse not extended as depicted.

5.9 Walk and trot no relationship. At canter and gallop called respiratory locomotory coupling, one breath per stride. At gallop, head up legs up, gut slides back, breathe in. Legs down, head down gut slides forward breathe out.

QUESTION 6

- 6.1 Molasses contains sugar, feed should be sugar free as sugar is a quick release energy causing horse to become hot.
- 6.2 More palatable, higher energy, binds feed together/less dusty.
- 6.3 Prebiotic encourages microbes growth.
- 6.4 If starch spills over into their hindgut it gets digested into lactic acid and causes some horses to become extremely excitable and hot.
- 6.5 Non-genetically modified.
- 6.6 Beet cannot be fed as is so you need to soak for 10 minutes before feeding.
- 6.7 Sugar beet root.
- 6.8 Weight gain without making the horse unmanageable. Aid rehydration.
- 6.9 Fibre is digested in the hindgut by microbes. Fermentation results in volatile fatty acids which are absorbed and used for gut enterocyte health and energy.

6.10 Carbohydrates.

6.11 Sugars are monosaccharides, are single units of specific molecules such as glucose, fructose, and mannose. Starches are polysaccharides/long chains of single sugar molecules/subunits linked together.

6.12 Lignin.

6.13 Speedi suggests it makes the horse go faster instead of its real meaning of 'quick to prepare'.

QUESTION 7

7.1 Tabulate 4 similarities and 5 differences between a horse's and a cow's digestive system.

* minus 1 mark if not presented as a table.

	Cow	Horse
Similarities (any 4)	<ol style="list-style-type: none"> 1. Digestion by fermentation 2. Volatile fatty acids produced and absorbed 3. Small intestine has duodenum, jejunum and ileum 4. Absorption of water in the large intestine 5. The small intestine receives the secretions of the pancreas and bile from the gallbladder, which aid digestion. Most of the digestive process is completed here, and many nutrients are absorbed through the villi into the blood and lymphatic systems 	
Differences (any 5 from each)	<ol style="list-style-type: none"> 1. Large rumen 2. Rumen ferments 3. Small intestine 40 m 4. Role of caecum not established 5. Hind gut 1 m in length 6. Cows can burp 7. Cows regurgitate food and rechew the cud 	<ol style="list-style-type: none"> 1. Small simple stomach 2. Large intestine and caecum ferments 3. Small intestine 20 m 4. Caecum main fermentation vat 5. Hind gut 8 m in length 6. Horses cannot burp 7. Horses cannot regurgitate food

SECTION C**QUESTION 8**

- 8.1 Four
- 8.2 It is an evergreen.
- 8.3 Because the leaves are sweet and horses prefer sweet and salty feeds.
- 8.4 Any 3
Severe diarrhea, colic and abnormal heart beat, nausea, excess salivation, abdominal pain, kidney failure.
- 8.5 White
- 8.6 Small intestine digesta is basic, stomach digesta is acidic, so depending on how much flows back, stomach content would become less acidic.
- 8.7 Cardiac sphincter muscle strongly closed and angle of oesophagus entering the stomach.
- 8.8 Jugular vein, thin walled, low pressure, superficially situated.
- 8.9
- Lidocaine IV to slow the heart rate.
 - Intravenous fluids to flush out the toxins.
 - Nasogastric tube insertion to drain fluid from stomach to stop over distention and rupture.
- 8.10 This horse had many organ systems affected especially the gastrointestinal system so the horse's nutrition had to be stabilized before it started work. The horse must have lost lots of muscle mass and weight so it would have been weak when starting work. Work should have started slowly and gradually increased as they could see it coped with each increase in work without any negative effects on its heart, nervous system and kidneys.
- 8.11 Be able to identify the plant, ensure all plant is removed from property or ensure horses cannot reach/get to the plant.

Total: 200 mark