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TOTAL MARKS

NATIONAL SENIOR CERTIFICATE EXAMINATION
NOVEMBER 2022

EQUINE STUDIES

EXAMINATION NUMBER

Time: 3 hours

200 marks

PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY

1. This question paper consists of 28 pages. Please check that your question paper is complete.
2. Read the questions carefully.
3. Answer **all** the questions.
4. Answer all the questions ON this question paper and hand it in at the end of the examination. Remember to write your examination number in the space provided above.
5. Please number your answers exactly as the questions are numbered.
6. It is recommended that you spend approximately one hour on each section.
7. It is in your own interest to write legibly and to present your work neatly.
8. THREE blank pages (page 26–28) are included at the end of the paper. If you run out of space for a question, use these pages. Clearly indicate the question number of your answer should you use this extra space.

FOR MARKER'S USE ONLY

Question	1	2	3	4	5	6	**Total**
Marks	29	33	43	28	43	24	**200**
Marked							
Moderated							

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SECTION A

QUESTION 1

1.1 Match the correct condition in Column A with the clinical signs in Column B and the actions to be taken in Column C. Write only the correct letter and the correct numbers in the spaces provided, e.g. J, (IX), k

		Conditions		Clinical Signs		Action
1.1.1	A	Millers Disease	(I)	Green/brown discharge from nostrils	a	Call vet, IV fluids, muscle relaxant
1.1.2	B	Nail bind	(II)	Pain on flexion, decreased joint mobility	b	Steroids, basket surgery
1.1.3	C	Tying up	(III)	Lameness	c	Adjust Ca:P ratio
1.1.4	D	Choke	(IV)	Enlarged facial bones	d	Call the vet, antibiotics, movement
1.1.5	E	DJD	(V)	Sweating, Dark urine, Muscle over firm	e	Remove the nail and Poultice
1.1.6	F	lymphangitis	(VI)	Increased drinking and urination	f	Intra-articular injections
1.1.7	G	Cushings	(VII)	Ataxia, front heel lacerations	g	Call the vet, sedation, nasogastric intubation
1.1.8	H	Wobblers	(VIII)	Temperature, pitting edema	h	Pergolide

1.1.1 _____

1.1.2 _____

1.1.3 _____

1.1.4 _____

1.1.5 _____

1.1.6 _____

1.1.7 _____

1.1.8 _____

(16)

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1.2 Give the full name for the following abbreviations of conditions/diseases.

1.2.1 DJD

_____

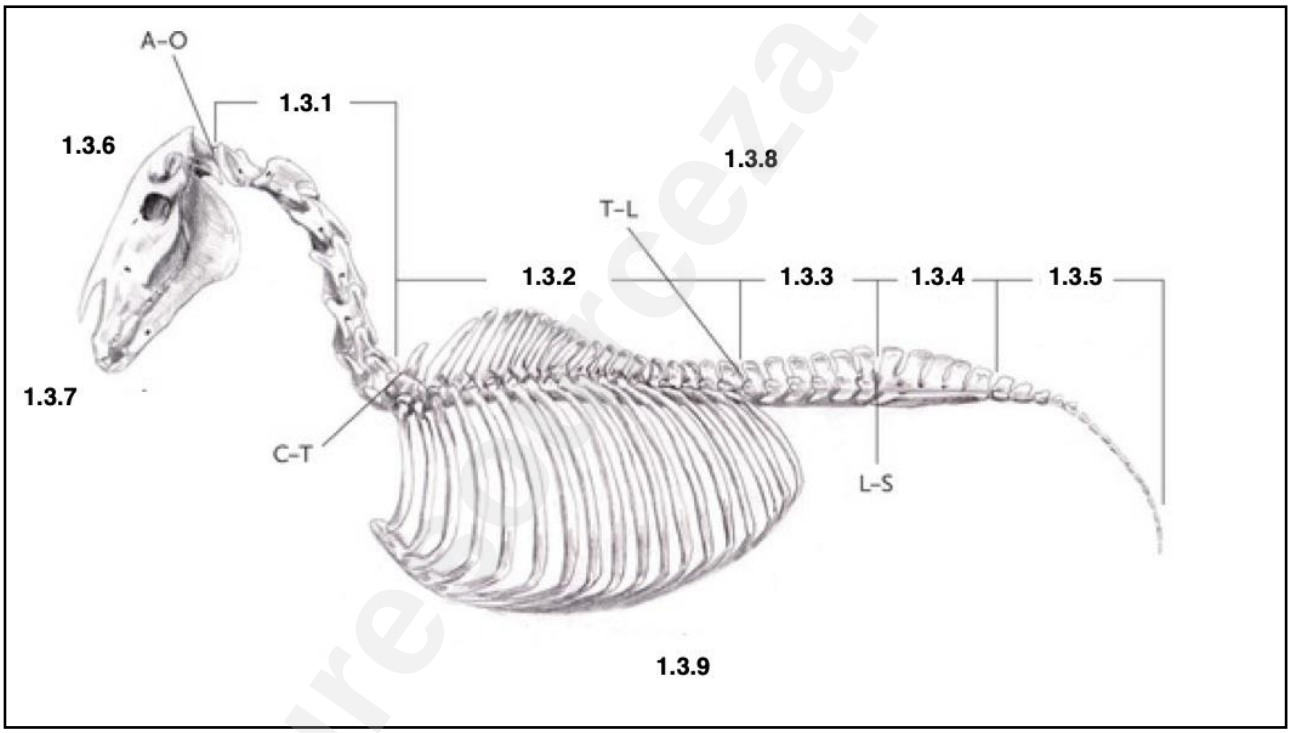
(1)

1.2.2 OCD

_____

(1)

1.3 Provide labels for the vertebral sections numbered 1.3.1 – 1.3.5 in the diagram below. Write the correct label next to each number below.



[Source: <https://quizlet.com/315494553/ap-parts-of-skeleton-feline-and-equinflash-cards/]

1.3.1 _____

1.3.2 _____

1.3.3 _____

1.3.4 _____

1.3.5 _____

(5)

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Match the anatomical view term given below to the correct number on the diagram. Write your answers in the space below.

Ventral, Dorsal, Rostral, Cranial

1.3.6 _____

1.3.7 _____

1.3.8 _____

1.3.9 _____

(4)

1.4 Name the condition that is the result of possible trauma to 1.3.1 and is classically characterised by ataxia.

_____

(1)

1.5 What is the average number of vertebrae in vertebral section 1.3.5.

_____

(1)
[29]

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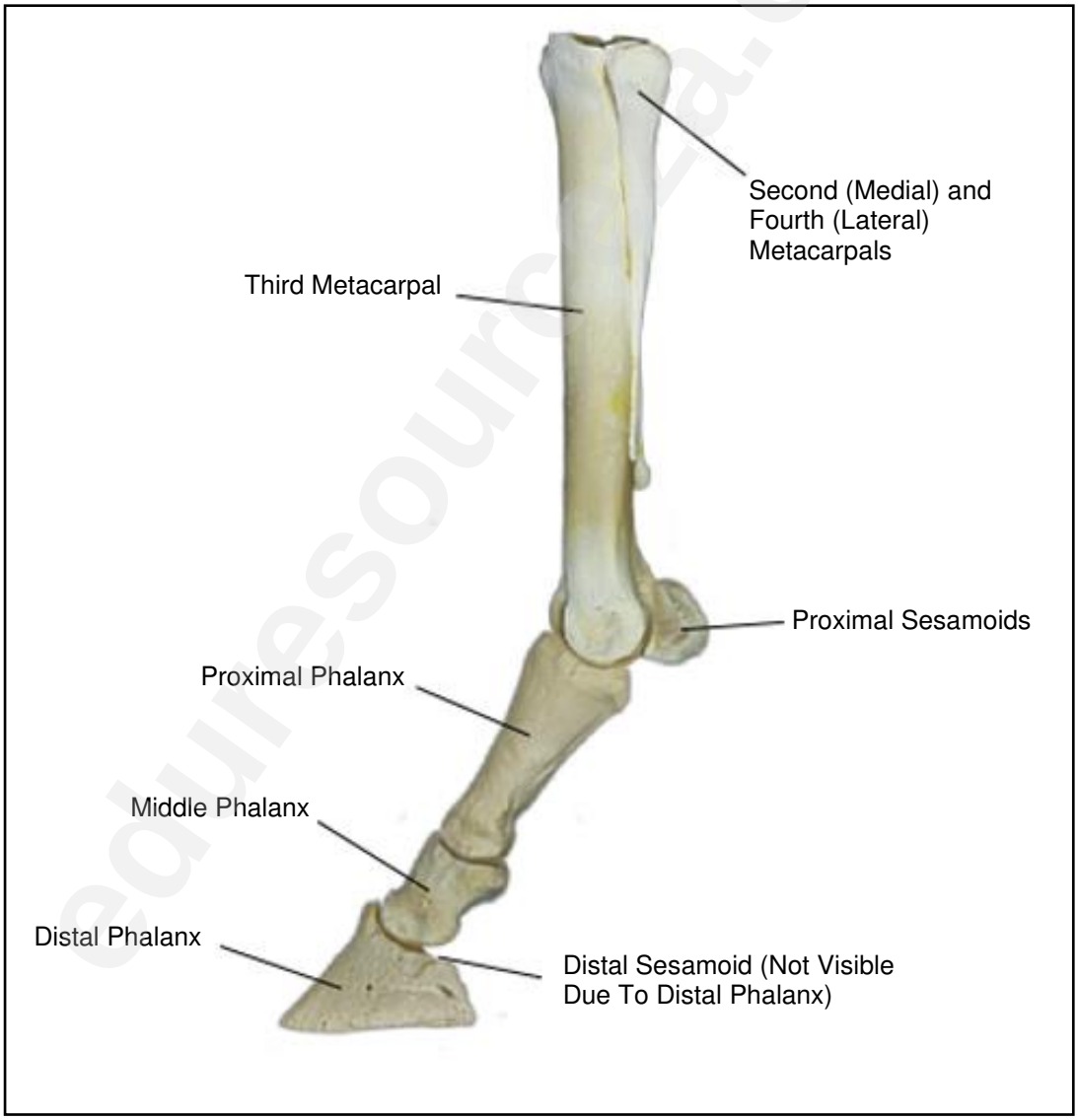
QUESTION 2

2.1 Sketch the following tendons and ligaments on the diagram of the lower leg skeleton below, and label each one.

- The superficial digital flexor tendon
- The suspensory ligament
- The distal check ligament
- The common digital extensor tendon
- The digital extensor tendon



[Source: <https://upload.wikimedia.org/wikipedia/commons/5/56/Equine-dist-forelimb-bones.png>]

(15)

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2.2 Name a condition caused by each of the conformation faults given below and suggest the corrective shoe that could be used to address this fault.

	Conformational fault	Condition caused by fault	Corrective shoe used to support
2.2.1	Long Canon bone		
2.2.2	Broken back HPA		
2.2.3	Over straight hind leg		
2.2.4	Pigeon toed		
2.2.5	Upright pasterns		
2.2.6	Sickle hocks		

(12)

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2.3 Complete the following table that relates to mare reproductive hormones. Write your answers in the spaces given below the table.

Hormones	**Source**	**Function**
2.3.1	Pituitary Gland	Develops follicle
LH	2.3.2	Ruptures follicle
Oestrogen	2.3.3	2.3.4
2.3.5	Corpus Luteum	Mains pregnancy, inhibits LH
Prostaglandin	2.3.6	Regresses CL

2.3.1 _____

2.3.2 _____

2.3.3 _____

2.3.4 _____

2.3.5 _____

2.3.6 _____

(6)
[33]

62 marks

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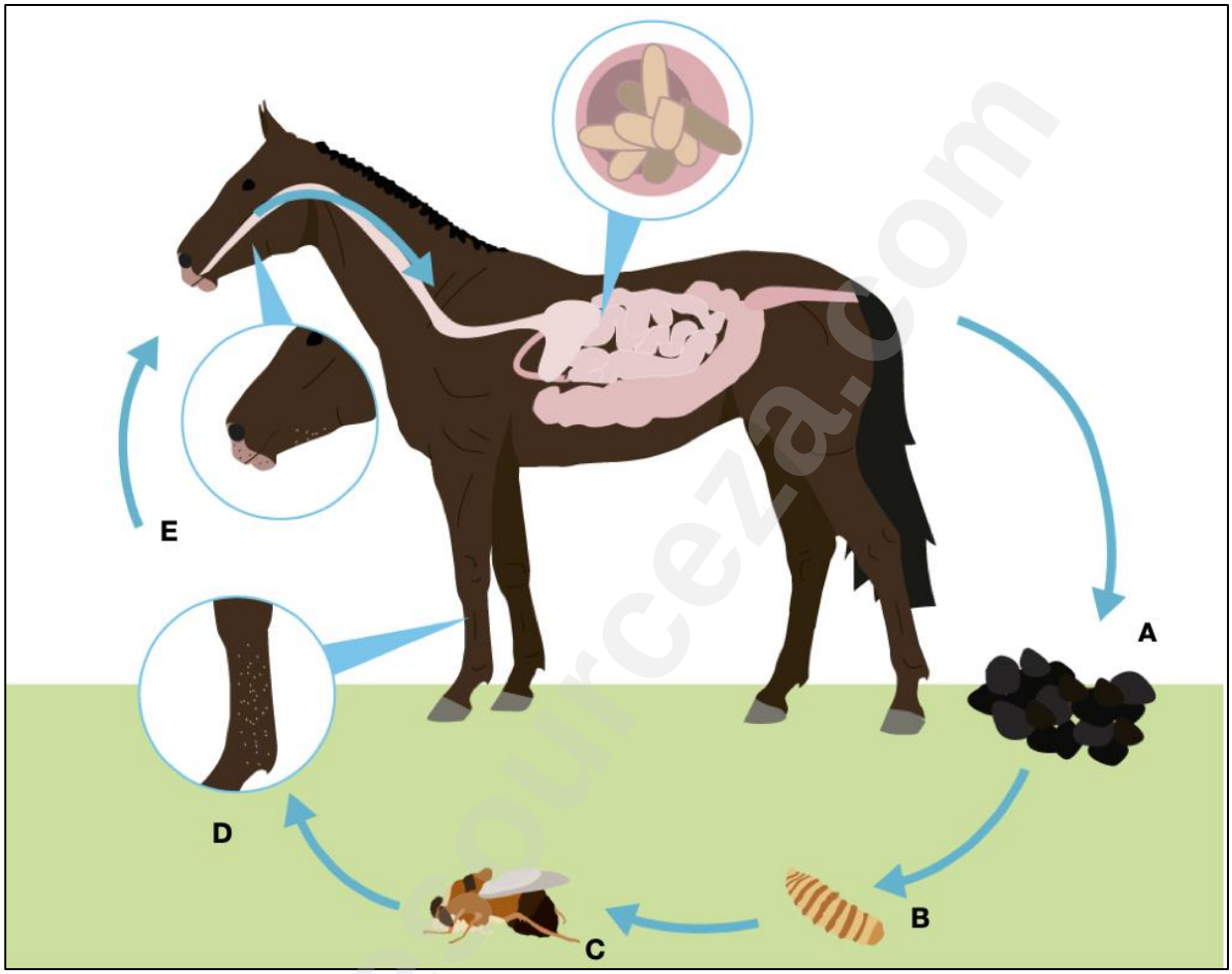
SECTION B

QUESTION 3

Study the life cycle below and answer the questions that follow.



[Adapted: <http://www.horsedvm.com/>]

3.1 Identify which parasite this life cycle belongs to.

_____

(1)

3.2 Describe each phase of the life cycle above.

A _____

B _____

C _____

D _____

E _____

(10)

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3.3 Read the following extract from 1968 titled 'Treatment'.

> According to Lapage, the following is frequently employed: 60 ml turpentine and 4 ml male fern extract in 1 litre raw linseed oil, for an adult horse, after starving the animal for 24 – 26 hours.

[Adapted: Hayes, 1968, Veterinary Notes for Horse Owners]

3.3.1 Select one part of the treatment plan above that is of concern and explain why this concern is no longer valid today as a form of parasite control.

(3)

3.3.2 Outline the ideal treatment plan for a horse with a high worm count for Large Red Worm.

(3)

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3.3.3

The understanding of 'Refugia' is regarded as the turning point in 'anthelmintic' resistance in the equine community.

Assess the validity of the above statement.

(6)

3.3.4 Explain 2 ways in which paddock rotation is a method of worm control.

(6)

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3.3.5 The horse below has been rescued by the SPCA. He has been diagnosed by a veterinarian as having chronic multiple parasite infestations and he has received treatment for the parasites. The present weight of the horse is 300 kg. The ideal weight for his size is 420 kg.

[Source: <https://www.thepetitionsite.com/656/458/494/help-the-poor-horses-who-are-being-starved/>]

Create an ideal feed plan for this horse that will prevent refeeding syndrome during the first 2 weeks of care.

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(14)
[43]

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QUESTION 4

4.1 When purchasing a broodmare to put in foal within the next 3 months, condition scoring becomes a priority. **Adjust** the bolded numbers in paragraph 1 below to make the statement true in Paragraph 2.

Paragraph 1

*Maintain open or maiden mares at a body condition score of **3** or **4** leading up to the breeding season. For pregnant mares that will be lactating in late winter or spring, a condition score of **5** or **5.5** is ideal. Keeping mares at condition scores higher than **6** does not enhance fertility and is not wise from an economic standpoint.*
[Source: <*https://www.horsejournals.com/horse-care/breeding/mare-foal/body-scoring-broodmares*>]

Paragraph 2

Maintain open or maiden mares at a body condition score of ____ or ____ leading up to the breeding season.

For pregnant mares that will be lactating in late winter or spring, a condition score of _____ or _____ is ideal.

Keeping mares at condition scores higher than _____ does not enhance fertility and is not wise from an economic standpoint.

(5)

4.2 Provide a list of foodstuffs that would be beneficial to a lean brood mare's condition scoring and fertility.

_____

_____

_____

_____

_____

_____

(5)

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4.3 For each of the descriptions below, give the name for the legislation that applies.

4.3.1 A compulsory insurance to which business owners must contribute. In the case of an accident or injury in the workplace an employee can claim from this fund:

_____

4.3.2 A compulsory insurance fund that will pay out to employees in the case of the employee being retrenched. Not applicable to those that choose to leave their job:

_____

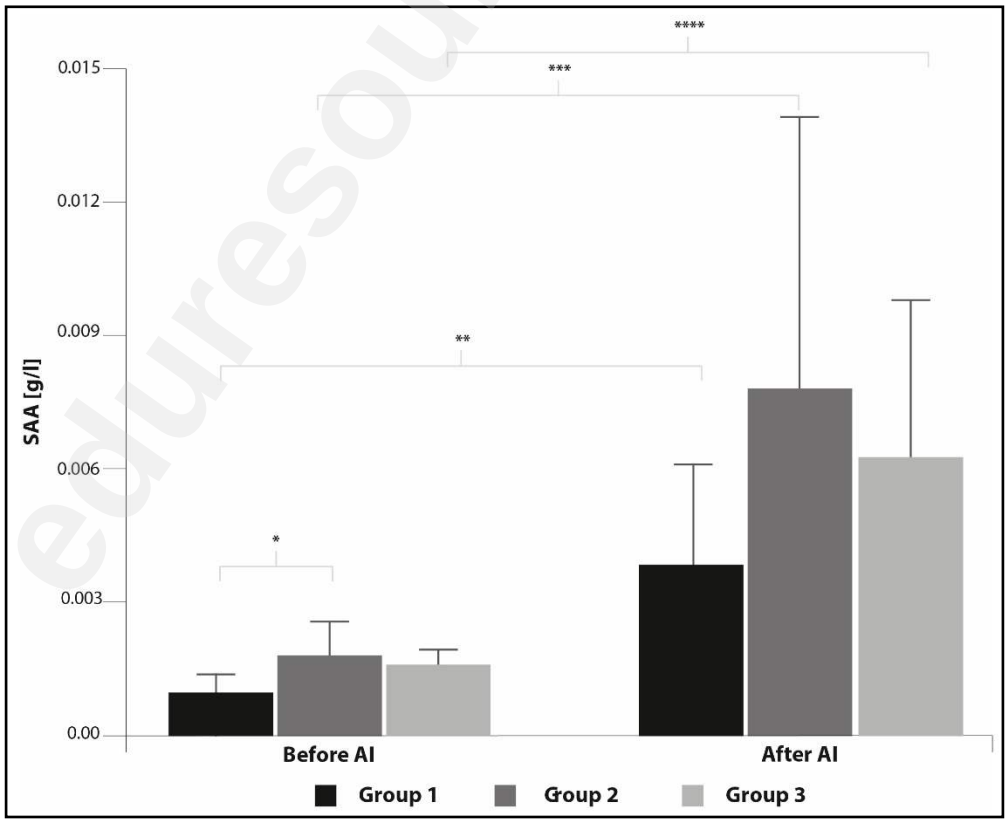
4.3.3 A system of paying income tax in which the employer pays tax directly to the government, and then takes this amount from the salary or wages of employees:

_____

(3)

4.4 Study the chart below and answer the questions that follow.

This chart tracks the inflammatory markers present in 3 groups of mares. These mares were sampled before and again after an AI procedure.



[Source: <https://www.mdpi.com/2076-2615/10/12/2438/htm>]

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4.4.1 Suggest why SAA (inflammatory marker) levels increase after AI across all groups.

(2)

4.4.2 Give 2 reasons why you think the SAA levels from Group 1 did not change as much as those in Group 2 and 3 after AI.

(4)

4.4.3 Which group do you think will have the highest pregnancy success rate? Justify your answer.

(3)

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4.5 Use the source below to answer questions below.

'Conformational defects affect the horse's way of moving and can also lead to future lameness due to excessive stress placed on certain areas of the body during athletic movements.'

[Source: <https://extension.uga.edu/publications/detail.html?number=B1400&title=Evaluating%20Horse%20Conformation>]

Do you agree or disagree with the statement above? Justify your answer.

(6)
[28]

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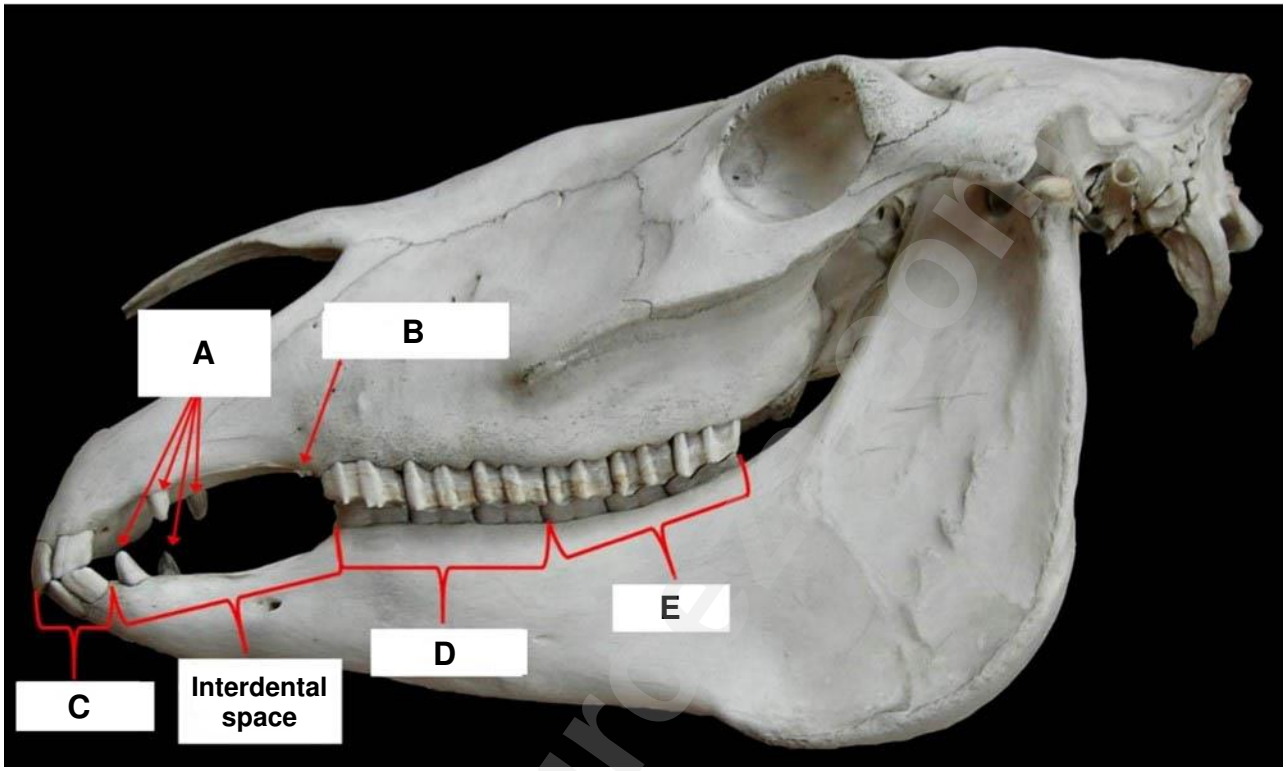
QUESTION 5

5.1 Study the diagram below showing the dentition of a **male** horse. Use it to complete the table that follows.



[Source: <https://tributeequinenutrition.com/articles/managing-horses-dental-health>]

	Category of Teeth	Average Number of Teeth
A		
B		
C		
D		
E		

(10)

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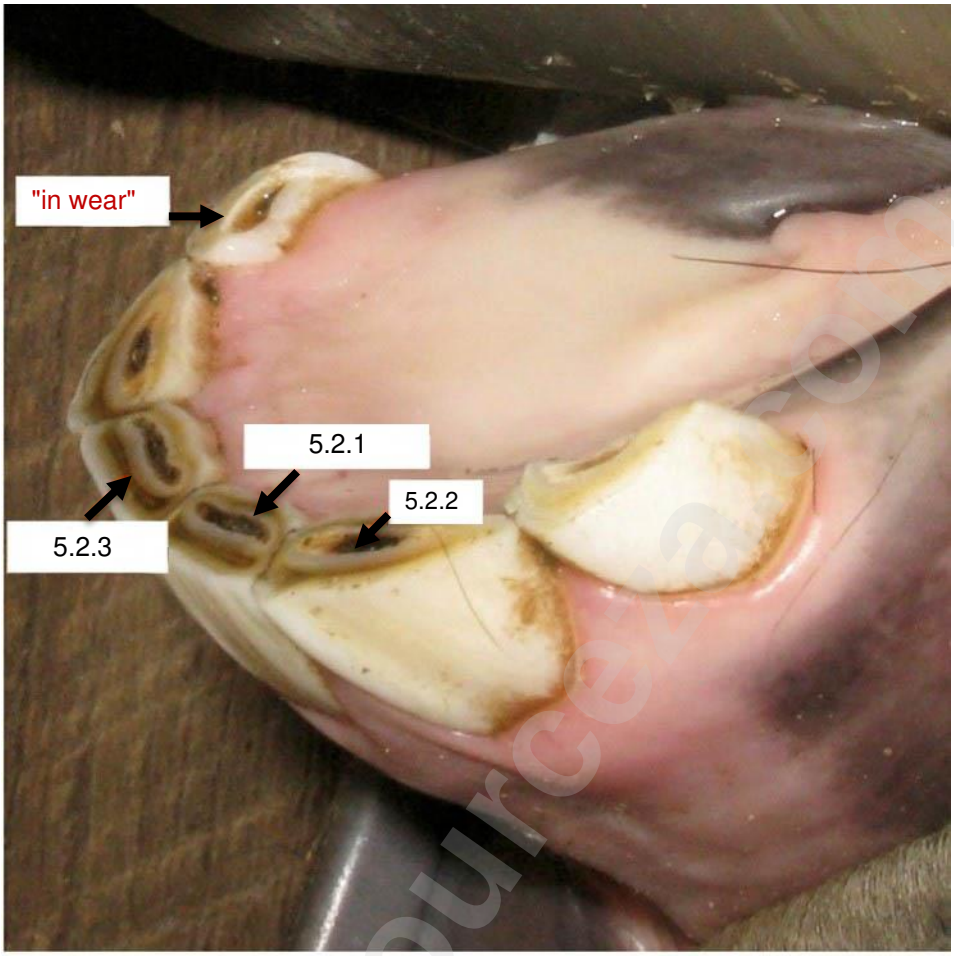
5.2 When ageing a horse, various aspects of their teeth are assessed. Identify the numbered features below.



5.2.1 _____ (2)

5.2.2 _____ (2)

5.2.3 _____ (2)

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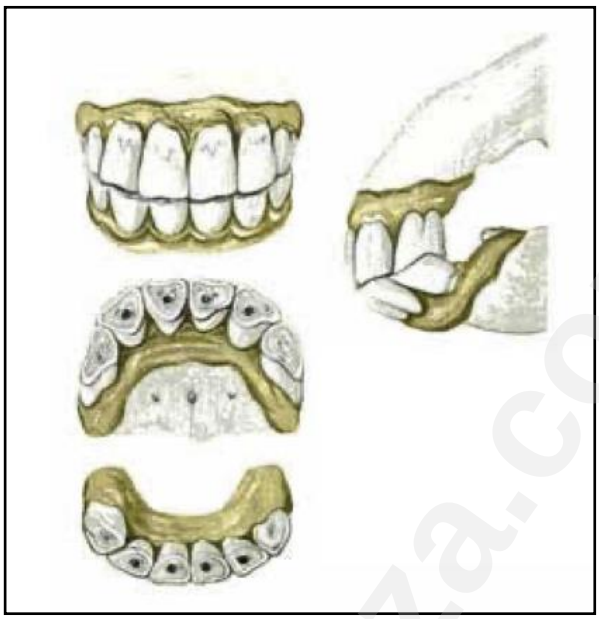
5.3 Use the diagrams below to decide on the age of the horse. Give 2 reasons for your answer.



[Source: <https://www.localriding.com/horses-age.html>]

(3)

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5.4 5.4.1 Study the information given in the nutritional label below.

GUARANTEED ANALYSIS		
Crude Protein	Min.	14.0%
Lysine	Min.	0.7%
Methionine	Min.	0.3%
Threonine	Min.	0.5%
Crude Fat	Min.	8.0%
Crude Fiber	Min.	16.0%
Dietary Starch	Min.	14.0%
Sugar	Min.	6.0%
Calcium	Min. 0.75% Max	0.95%
Phosphorus	Min.	0.65%

[Source: <http://www.horsefeedblog.com/wp-content/uploads/2014/02/Guaranteed-Analysis.jpg>]

Construct a bar graph that compares the quantities of nutrients in this feed.

(10)

5.4.2 What ingredients may have been used to give this feed 14% Protein?

_____

_____

_____

(4)

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5.5 A yard manager receives the horse referred to in Question 5.3.

Provide a set of appropriate questions that she would give the previous carer of this horse to help her fully care for the health, feed, feet and behaviour of the horse.

(10)
[43]

114 marks

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SECTION C

QUESTION 6

Read the following source carefully and use it to answer the questions that follow.

Give Horses a Week To Learn To Use Automated Feeding Stations

Swedish researchers observed 22 geldings as they learned to navigate automatic feeding stations equipped with automatic doors, food dispensers, and microchip readers.
To test horses' ability to learn automated feeder use, Kjellberg and her fellow researchers followed 22 Swedish Warmblood geldings, aged 3 to 18, as they learned to use automated forage and grain feeders, set in a paddock, that open with automatic microchip reading.

This **utopic** situation depends, of course, on whether horses can learn to use the feeders safely and effectively. Equipped with automatic doors, food dispensers, and microchip readers, automated feeders are far more complex than other automated devices in the horse industry, such as waterers. According to a new study, though, horses learn to master automated feeders within a few days, using them safely and efficiently, said Linda Kjellberg, PhD student, of the Swedish National Equestrian Centre in Strömsholm and the Department of Anatomy, Physiology, and Biochemistry at the Swedish University of Agricultural Sciences in Uppsala.

'Most horses learned to use them very quickly, especially the easy (keepers), who learned to feed from these stations in two to three days,' she continued. 'Some horses took longer, but, on average, two-thirds of them had learned it within a week.'

Each horse wore a neck collar equipped with a pre-programmed chip that signalled the feeder to distribute the appropriate amount of food for that horse up to 20 times a day. The feeder itself works as a station with six closed stalls that open individually when a horse approaches, Kjellberg said. The horses in this study received concentrated feeds, minerals, and forage through automated feeders (although the study only focused on their learning time for forage).

Each horse received one-on-one training from an experienced handler who taught the horse to lower its head, for example, for the microchip reading and how to enter and exit the stall.
They found that by the fourth day of training, almost half the horses had learned the system well enough to get at least 90% of their ration, Kjellberg said. By eight days, 71% of the horses had reached this goal. At 16 days, that figure reached 95%. Older horses, in particular, needed more training sessions, Kjellberg said. Easy keepers were the fastest to learn how to use automated feeders.

Feeder use wasn't without a few issues – mainly related to social hierarchy, said Kjellberg.

One very easy (keeper) quickly learned that if he just stayed in the stall, he would get forage at least once an hour," she continued. 'But as soon as we got the automatic concentrated grain stations in operation, he had to leave the forage station to go check if he could get some concentrated feeds. Therefore, we recommend giving horses concentrated feed in these kinds of systems as well, to keep a flow going through the stations.'

[Adapted from source: <https://thehorse.com/1100597/give-horses-a-week-to-learn-to-use-automated-feeding-stations/>]

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6.1 6.1.1 Give 3 potential advantages of an automated feeding system.

(3)

6.1.2 Give 3 potential disadvantages of an automated feeding system.

(3)

6.2 This system administers feeds including concentrates, forage and minerals. What else could be administered in this system?

(2)

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6.3 Why was 'one on one handling' necessary in this study?

(3)

6.4 Why did older horses require more training?

(3)

6.5 Give the external characteristics of an ***easy keeper***.

(5)

6.6 Why would checking horses daily still be necessary when using this system?

(2)

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6.7 Do you think this system could be successfully used in South Africa? Justify your answer.

(3)

24 marks

Total: 200 marks

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ADDITIONAL SPACE (ALL QUESTIONS)

REMEMBER TO CLEARLY INDICATE AT THE QUESTION THAT YOU USED THE ADDITIONAL SPACE TO ENSURE THAT ALL THE ANSWERS ARE MARKED.

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