UNAM
UNIVERSITY OF NAMIBIA

FACULTY	HEALTH SCIENCES AND VETERINARY MEDICINE		
SCHOOL	VETERINARY MEDICINE		
SUBJECT	ANAESTHESIOLOGY		
SUBJECT CODE	V3702CA		
DATE	NOVEMBER 2024		
DURATION	2 HOURS	**MARKS**	100

FIRST OPPORTUNITY EXAMINATION

Examiners: Prof F Stegmann

Second Examiner: Dr A Raath

External Examiner: Dr A Celliers

Instructions

1. **Write your name and student number clearly on each page.**
2. **Answer all Multiple-Choice Questions (Section A) on the Question Paper.**
3. **Answer all Written Questions (Section B) on the Answer Book.**
4. **Any form of malpractice is unacceptable.**
5. **This paper consists of 13 pages, including the cover sheet.**
6. **Use of a calculator is permissible.**

NAME: ..... **STUDENT NO. .....**

SECTION A (30 MARKS)

Multiple choice questions. One mark each unless specified otherwise.

Answer all questions on the Question Paper and insert in the Examination Book.

Question 1.1

Which one of the following is required in addition to a laryngoscope for tracheal intubation in cats?

A) Mouth gag

B) Local anaesthetic spray

C) Stylet

D) 2nd plane of surgical anaesthesia

Question 1.2

Which sign in the horse will indicate 3rd plane of surgical anaesthesia?

A) Sluggish palpebral reflex

B) Absent anal reflex

C) Bradycardia

D) Nystagmus

E) Absent corneal reflex

Question 1.3

Which one of the following components is located in the breathing circuit of an anaesthetic machine?

A) Flow meter

B) Pressure reduction valve

C) Adjustable pressure limiting valve

D) Oxygen flush valve

E) Vaporiser

Question 1.4

Which sign in the cat indicates adequate analgesia during surgery?

A) Absence of the pedal reflex

B) Reduced masseter muscle tone

C) Sluggish anal reflex

D) Absence of lacrimation

E) Absence of gag reflex

Question 1.5

Which type of local anaesthetic block results in the longest duration of action?

A) Local infiltration

B) Epidural

C) Perineural

D) Plexus

E) Subcutaneous

Question 1.6

Hypoxia is diagnosed when the PaO_2 is 60 mmHg. What will the % haemoglobin saturation be at this partial pressure?

A) 95

B) 90%

C) 85%

D) 70%

E) 60%

Question 1.7

Which drug may induce atrio-ventricular block in a horse?

A) Romifidine

B) Acepromazine

C) Glycopyrrolate

D) Halothane

E) Pethidine

Question 1.8

Which one of the following evaluates the efficacy of ventilation?

A) Oxyhaemoglobin saturation

B) Tidal volume

C) Partial pressure of oxygen

D) Ventilation rate

E) End-tidal carbon dioxide partial pressure

Question 1.9

Which one of the following anaesthetic drugs will also improve analgesia?

A) thiopentone

B) alfaxalone

C) xylazine

D) isoflurane

E) azaperone

Question 1.10

Which opioid is a partial μ-agonist?

A) morphine

B) fentanyl

C) buprenorphine

D) pethidine

E) tramadol

Question 1.11

The recommended fasting protocol for an adult bovine before general anaesthesia is:

A) 12 hours no food or water

B) 12 hours no food, water ad lib

C) 24 hours no food, 12hours no water

D) 24 hours no food and no water

E) 24 hours no food, water ad lib

Question 1.12

Calculate the fresh gas flow rate for a 20 kg dog with a ventilation rate of 12 breaths/min. on a circle rebreathing circuit following intravenous induction. **(2 Marks)**

A) 1000 mℓ/min

B) 800 mℓ/min

C) 600 mℓ/min

D) 400 mℓ/min

E) 200 mℓ/min

Question 1.13

Which one of the following is associated with rapid recovery from anaesthesia following a single intravenous bolus of propofol?

A) Liver metabolism

B) Kidney excretion

C) Distribution to the fat compartment

D) Plasma cholinesterase inactivation

E) Distribution to the muscle compartment

Question 1.14

Which breathing circuit is classified as a rebreathing circuit?

A) Circle

B) T-tube

C) Mapleson F

D) Magill's system

E) Mapleson C

Question 1.15

Which clinical effect may be observed after intravenous diazepam in dogs?

A) Mydriasis

B) Cardiac arrhythmias

C) Catalepsy

D) Excitation

E) Bradycardia

Question 1.16

Calculate the drug volume (ml) to be administered to a 30 kg dog. Drug A at a dose of 20 µg/kg. Drug A is supplied as a 0.1% solution. **(2 marks)**

A) 4 ml

B) 2 ml

C) 0.1

D) 0.4 ml

E) 0.6 ml

Question 1.17

Which premedication- and induction protocol is preferred for caesarean section in a cardiovascular stable dam?

Premedication: (i) morphine, (ii) acepromazine (iii) preoxygenation

Induction: (iv) mask induction with isoflurane, (v) propofol, (vi) ketamine

A) ii, vi

B) i, iv

C) iii, v

D) ii, iv

E) iii, iv

Question 1.18

A dog requires surgery for pelvic fracture repair. Morphine and carprofen were administered postoperative, but on day 2 following surgery the dog experiences severe pain. What is the recommended protocol to follow to resolve the pain?

A) Increase the carprofen dose.

B) Increase the morphine dose.

C) Add gabapentin to morphine and carprofen.

D) Replace morphine with butorphanol.

E) Replace carprofen with tramadol.

Question 1.19

Which protocol is suitable for short term general anaesthesia in a 3-year-old stallion scheduled for a field castration?

Premed: (i) xylazine + morphine, (ii) detomidine + morphine, (iii) romifidine + butorphanol

Induction: (iv) guaifenesin +thiopentone, (v) ketamine + diazepam

A) i, iv

B) ii, v

C) iii, v

D) ii, iv

E) All of the above (A, B, C, & D)

Question 1.20

"Wash-In" of an inhalation anaesthetic machine is best facilitated by:

A) Increasing vaporiser setting.

B) Increasing both vaporiser setting and oxygen flow rate.

C) Increasing oxygen flow rate.

D) Activating the oxygen flush valve.

E) Closing the adjustable pressure limiting (APL) valve.

Question 1.21

Which one of the following pharmacological characteristics is **TRUE** for ketamine?

A) Decreases heart rate.

B) Sympathetic activator.

C) Increase minute ventilation.

D) Increase threshold for convulsions

E) Induce surgical anaesthesia.

Question 1.22

Which one of the following is **NOT** associated with intraoperative cardiac arrest?

A) atrio-ventricular block

B) ventricular fibrillation

C) ventricular tachycardia

D) asystole

E) apnoea

Question 1.23

Which one of the following nerves should be infiltrated to paralyse the orbicularis oculi eye muscles for suturing a lacerated eyelid in a sedated horse?

A) infraorbital

B) auriculopalpebral

C) zygomaticus

D) trochlearis

E) lacrimal

Question 1.24

Which one of the following is an accurate estimate of canine blood volume?

A) 60 ml/kg

B) 70 ml/kg

C) 80 ml/kg

D) 90 ml/kg

E) 100 ml/kg

Question 1.25

Which drug is recommended in cattle during standing procedures for a "stun"/immobilising effect?

A) butorphanol

B) tramadol

C) midazolam

D) medetomidine

E) ketamine

Question 1.26

Which inhalation anaesthetic agent is the least potent? The minimum alveolar concentration values for the anaesthetics are:

A) Halothane 0.86

B) Isoflurane 1.28

C) Sevoflurane 2.36

D) Desflurane 7.2

Question 1.27

Which one of the following is an alternative for the cervical paravertebral block in a dog?

A) femoral nerve

B) caudal block

C) intercostal block

D) brachial plexus block

E) caudal epidural block

Question 1.28

A dog with a penetrating wound in the thorax that displays paradoxical ventilation, is anaesthetised. Which action is recommended following induction and tracheal intubation?

A) perform tracheostomy

B) initiate positive pressure ventilation

C) administer an intercostal nerve block

D) insert a chest drain

E) administer IV fluids to counter loss of thoracic pump

Sub Total: .....

SECTION B (70 Marks)

Written questions. Answer all questions in the Examination Book

Question 2 (10 marks)

Name and describe the function of the components in the fresh gas preparation stage of an inhalation anaesthetic machine.

Question 3 (10 marks)

Concerning epidural anaesthesia in the dog:
3.1 Name the appropriate space and describe the technique used to locate the space for needle placement. (6)

3.2 Describe characteristic vertebral anatomical features associated with the space (1) and what difficulty may be encountered as result? (1)

3.3 Name two suitable adjunct drugs to be added to lignocaine to prolong analgesia. (2)

Question 4 (10 marks)

4.1 Describe peripheral sensitisation (5) and name a drug suitable to minimise pain resulting from this phenomenon. (1)

4.2 What long term effects may this phenomenon induce if not adequately controlled? (4)

Question 5 (10 marks)

Name adverse effects associated with perioperative hypothermia (5) and describe measures to be taken to minimise these perioperative heat losses. (5)

Question 6 (10 marks)

A horse presents lame in the front limb and a soft tissue swelling sensitive to touch is noticed dorsally on the distal shaft of the cannon bone.

6.1 Name the local anaesthetic block(s)(s), and the nerves(s), that is/are required to confirm the swelling as a possible cause of the lameness. (5)

6.2 Describe the site(s) for local anaesthetic infiltration. (4)

6.3 Name the preferred local anaesthetic to be used. (1)

Question 7 (10 marks)

7.1 Describe guidelines for the application of intermittent positive pressure ventilation

with an inhalation anaesthetic machine (8)

7.2 What changes/adjustments are required when an inhalation anaesthetic machine is used for ventilation? (2)

Question 8 (5 marks)

List five pharmacological effects of the α_2-adrenergic agonists that influence the quality of sedation/anaesthesia.

Question 9. (5 marks)

9.1 Describe monitoring the cardiovascular system during anaesthesia **without** any devices. (3)

9.2 Name a device and describe its function that may be used to assist in monitoring the cardiovascular system (2)

Subtotal MCQ: .....

Subtotal Written: .....

TOTAL: .....