**Exam: A**

**University of Guelph**
**Department of Animal & Poultry Science**
**ANSC *2340 Structure and Function of Farm Animals**
**Winter, 2012**
**First Midterm Examination: February 7, 2012**

**Name (PRINT):** _____

**Student Number:** _____

**Lab section (day of week and time):** _____

**This examination has a total of 103 possible marks and is worth 25% of the final grade for the course.**
**Please enter your name and ID number on both this examination paper and the computer card. Both must be handed in after the exam has been completed.**

**There are 2 sections to this exam.**

**Section 1 of the exam includes 35 multiple choice questions that are worth 2 marks for a total of 70 marks.**

**Section 2 of the exam includes 9 short answer questions. This section is worth 33 marks in total**

**Answer all 44 questions. Also fill in the answer for the 36th multiple choice question that asks the version of the exam written based on the letter of the alphabet in the upper right hand corner on this page.**

1) Which of the following is true regarding ruminant and monogastric digestive tracts?

a. The dental pad of ruminants replaces the lower incisors and canines of the monogastric.

b. Mechanical (physical) digestion is important in the rumen but this process does not occur in the simple stomach, monogastric.

c. The forestomach in ruminants is nonsecretory which is different than the secretory function found in the avian proventriculus.

d. When comparing the stomach and small and large intestine, the stomach makes up the majority of gastrointestinal tract capacity in both horses and cattle.

e. The acid and digestive enzyme secretions found in the porcine stomach are also found in the ruminant abomasum and the avian ventriculus.

2) How does the avian digestive system differ from mammalian digestive systems ?

a. While teeth, lips, and tongue are extensively used for food gathering by mammals, birds can use their beaks and claws for gathering food.

b. There is no difference between the mammalian and avian esophagus as this structure is used to take ingested food and directly take it to the stomach (ventriculus in birds).

c. The avian ventriculus has similar functions to the ruminant stomach with acid and enzyme secretion.

d. Cattle use rumination and mixing in the rumen for particle size reduction while birds use the muscular proventriculus to grind food using ingested grit.

e. The mammalian monogastric stomach can be used to store food while food can not be stored in any part of the avian gastrointestinal tract.

3) Which of the following best describes the hock joint?

a) Also known as the carpus.

b) Located proximal to the shank in the forelimb.

c) Located on the dorsal surface of farm animals.

d) Located cranial to the flank in pigs.

e) Located proximal to the shank in the hindlimb.

4) Which of the following accurately describes location of body structures?

a) Cranial is the same as posterior.

b) The hook bones would be located on the medial side of the dairy cow.

c) The flank is dorsal to the loin in pigs.

d) The rump is anterior to the shoulder in pigs.

e) The pin bones are caudal to the loin in beef cattle.

5) Which of the following is true regarding the domestication of pigs?

a) Pig temperament has improved by breeding pigs for leanness.

b) The Chinese had a major influence in changing size and conformation of pigs.

c) Hair and skin color is still important currently for identifying breeds with specific growth and carcass characteristics.

d) Meat quality is a major priority in current breeding programs.

e) The Spanish had a major influence in changing size and conformation of pigs.

6) How are fat depots influential?
a) Seam fat is valued highly by the packer.
b) The hypodermis will provide thermal insulation while kidney fat acts as shock absorber.
c) There needs to be a minimal amount of intermuscular fat over the carcass for beef to grade.
d) As body condition score increases, signs of estrus and percentage pregnant decreases.
e) The amount of intermuscular fat on a carcass is related to beef tenderness.

7) Which of the following is true regarding the respiratory tract?
a) Incoming air can only be warmed by flowing through the turbinate bones.
b) Meatuses are airfilled cavities that communicate with the nasal passages.
c) Conchae in the nasal passages warms, humidifies, and filters air that has entered the nasal cavity.
d) The epiglottis directly covers the trachea to ensure food does not enter the respiratory system when an animal swallows.
e) An increase in diameter of structures in the bronchial tree is present as they lead from the bronchi to the terminal bronchioles.

8) Which of the following is not a function of the respiratory tract?
a) Body temperature regulation.
b) Removing water from the body.
c) Regulation of acid/base balance.
d) Manipulating composition of blood.
e) Gas exchange.

9) Which of the following is true regarding the domestication of cattle?
a) The development of Continental breeds of cattle with their large size has enabled early finishing with high degrees of marbling in beef production.
b) The cattle that we feed in Canada today are linked to *Bos longiforns* cattle.
c) *Bos primigenius* cattle developed a shoulder hump, not much of a dewlap, and droopy ears as it evolved into today's *Bos indicus* cattle.
d) *Bos nomadicus* was the predecessor of current British and Continental breeds.
e) The European Auroch was the predecessor of current Bos indicus cattle.

10) Which of the following is best associated with all the modifications of the epidermis that we discussed (integument, hair, hooves, and horns)?
a) Nerves
b) Blood Vessels.
c) Keratin.
d) Corium.
e) Papilla.

11) How does age or sex of animal influence animal production?
a) At 17 to 19 weeks of age, a broiler is typically marketed as a roaster.
b) Steers have superior growth performance as compared to bulls.
c) There is no difference in liveweight when marketing gilts and sows.
d) Intramuscular fat deposition is greater in bulls versus steers.
e) None of the above.

12) Pick identify the **false** statement regarding teeth.
a) All mammals have a set of milk teeth which will fall out and be replaced by permanent teeth.
b) Both the root of the tooth and the crown are covered by cementum according to the textbook.
c) Dentin surrounds the tooth pulp.
d) Canine teeth are also referred to as eye teeth.
e) The upper incisors found in herbivores such as horse has been replaced by a dental pad in ruminants.

13) Which of the following statements is true regarding hooves and horns?
a) Both are made up of dense keratin.
b) Both are made up of modified dermis.
c) The corium in the hoof provides nutrients for growth of the outer layer of the hoof while the corium in horn acts as the site for horn growth.
d) While hooves have many characteristics similar to skin, an individual hoof has no relationship to the skin covering the rest of the limb.
e) Two of the above.

14) Name the structure which spermatozoa must travel through to get from the cervix to the oviduct.
a) Fallopian tubes.
b) Vagina.
c) Uterine tubes.
d) Womb.
e) Ovary.

15) Hardware disease can afflict cattle and may involve barbed wire penetrating

**i)** _____ initially before eventually penetrating **ii)** _____ **.**

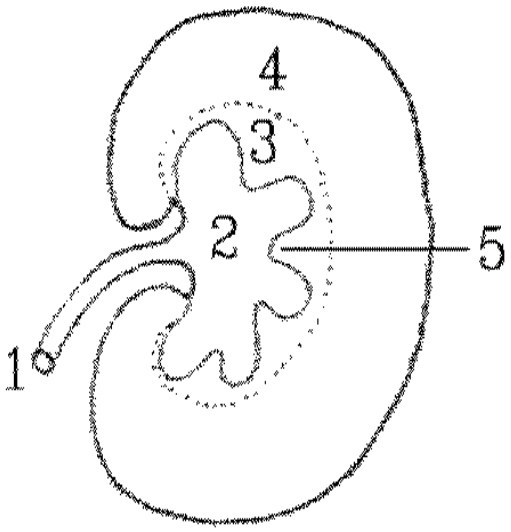
a) i) reticulum ii) lungs.
b) i) reticulum ii) spleen.
c) i) omasum ii) heart.
d) i) rumen ii) heart.
e) i) rumen ii) liver.

16) Food passes thru the porcine gastrointestinal tract in the following order:

a) Esophagus, stomach, large intestine, caecum, small intestine.
b) Esophagus, stomach, small intestine, large intestine, caecum.
c) Esophagus, stomach, ileum, duodenum, jejunum, caecum, large intestine.
d) Esophagus, stomach, duodenum, jejunum, ileum, caecum, large intestine.
e) Esophagus, stomach, jejunum, duodenum, ileum, large intestine, caecum.

17) How does the epidermis differ from dermis?

a) The epidermis is highly vascularized unlike the dermis.
b) Both are rich in fibroelastic connective tissue for structural strength and flexibility.
c) While epidermis has melanocytes for melanin synthesis, dermis has fibroblasts for collagen and elastin synthesis.
d) Keratinization and cornification are important processes for both skin layers.
e) The dermis makes up the majority of the total mass of the skin since millions of dermal cells are shed every day.




18) Identify structures 1 through 4 in the kidney.

a) 1 = urethra, 2 = pelvis, 3 = cortex, 4= medulla.
b) 1 = urethra, 2 = pelvis, 3 = medulla, 4= cortex.
c) 1 = ureter, 2 = pelvis, 3 = cortex, 4= medulla.
d) 1 = ureter, 2 = pelvis, 3 = medulla, 4= cortex.
e) 1 = ureter, 2 = pelvis, 3 = papilla, 4= cortex.

19) Which blood vessel(s) is (are) responsible for plasma being forced into the capsular space?

a) Glomerular capillaries
b) Afferent arteriole and peritubular capillaries.
c). Glomerular and peritubular capillaries.
d) Afferent and efferent arterioles.
e) Glomerular capillaries and efferent arteriole.

20) Which of the following correctly describes the travels of spermatozoa from the seminiferous tubules?
a) Seminiferous tubules to epididymis to rete testis to efferent ducts to ductus deferens to urethra.
b) Seminiferous tubules to efferent ducts to rete testis to epididymis to vas deferens to urethra.
c) Seminiferous tubules to rete testis to efferent ducts to epididymis to prostate to urethra.
d) Seminiferous tubules to rete testis to efferent ducts to epididymis to ductus deferens to urethra.
e) Seminiferous tubules to rete testis to efferent ducts to seminal vesicles to epididymis to urethra.

21) Which of the following is true about the female reproductive tract?
a) Fertilization of the egg with sperm occurs in the fallopian tubes.
b) The embryo implants and develops in the cervix.
c) Teat numbers are similar amongst ruminant species.
d) The ovum can be fertilized by a spermatozoa even it is retained in the ovary.
e) The corpus luteum is the remnant of the follicle left after ovulation and will synthesize estrogen to sustain the pregnancy.

22) Which structure in the placenta is responsible for vascular communication between the fetus and mother?
a) Amnion.
b) Amniochorion.
c) Allantois.
d) Chorion.
e) Urachus.

23) Which of the following is true regarding anatomical terms of reference?
a) Rostral means towards the head.
b) A sagittal plane divides the body into left and right halves which are never equal.
c) A median plane can be considered a special type of sagittal plane.
d) The diaphragm separates the abdominal from the pelvic cavities.
e) The phalanges are proximal to the carpus.

24) Which of the following forms one half of the jaw joint?
a) Parietal bone.
b) Maxillary bones.
c) Incisive bones.
d) Occipital bone.
e) Temporal bone.

25) Which of the following accurately describes what takes place in the male reproductive tract?

a) The ischiocavernosus (or ischio-cavernosus) muscles straightens out the sigmoid flexure after an erection is over.
b) Interstitial cells in the testes are responsible for the production of spermatozoa.
c) The pizzle eye is also known as the retractor penis muscle.
d) Final maturation of spermatozoa occurs in the tail of the epidydimis.
e) A small bulbourethral gland is associated with the development of boar taint.

26) Which of the following accurately describes structures or functions in the placenta?

a) Allantoic fluid acts to cushion the fetus in the placenta
b) The placenta is directly connected to the uterus via the urachus.
c) There is no need for any specialized structure for waste removal from the fetus.
d) There is direct contact between fetal and maternal blood vessels.
e) Detachment of the chorion is generally not a problem in sows.

27) Ruminant teeth:

a) Have an extensive covering of dentine on the crescent shaped ridges of the cheek teeth (molar, premolars).
b) Include canine teeth for both deciduous and permanent teeth.
c) Include upper incisors for permanent teeth but these are missing in deciduous teeth.
d) Have enamel covering all of the crescent shaped ridges of the cheek teeth (molars, premolars).
e) Are of the bunodont class for both incisors and cheek teeth.

28) Roles for bones of the skull include:

a) The corneal (cornual) process of the frontal bones serving as the site for horn development.
b) The premaxillary and maxillary bones forming the hard palate.
c) The occipital condyle serving as the site for the joint between the skull and lower jaw.
d) The ramus as the site where teeth are found on the mandible.
e) The turbinate bones for the sense of taste.

29) Which of the following statements is true regarding anatomy of the heart ?

a) The papillary muscles are only involved with the tricuspid valve of the heart.
b) After going through the AV node, the electrical impulse travels down the interatrial septum.
c) Depolarization of the SA node is responsible for blood being pumped from the ventricles into the pulmonary blood vessels before the action potential reaches the AV node.
d) The Bundle of His is used to depolarize the atria.
e) Closing of the semilunar valves results in the dup sound.

30) Which of the following is true about the beef slaughter and processing the carcass afterwards?

a. Carcasses are chilled with low air speed and humidity for the first 48 hours.
b. Stunning is the major cause of death when processing beef cattle at packing plants.
c. Packing plants like to make sure that cattle have full guts (gastrointestinal tracts) before they are killed.
d. The goal with sticking is rapid and complete removal of blood as possible.
e. Carcasses are often frozen right after coming off the kill floor.

31) Which of the following best describes use pharmaceuticals in food animal production?

a) Implants are routinely administered in the ears of most farm animals to increase gain, feed conversion, and muscling.
b) Improvac is fed to increase gains and feed conversion in feedlot heifers and steers.
c) Estrogenic implants have a greater effect on gains, feed conversion, and muscling than androgenic implants.
d) Improvac should reduce the incidence of boar taint in market weight boars and ridgelings.
e) Improvac should be used to reduce stress when castrating gilts going to market at approximately 6 months of age.

32) Which of the following statements is true?

a) While blood, fat, and bone are examples of connective tissue, the mammary gland is essentially a modified sebaceous gland.
b) Both amoeba and specialized cells in animals are always in direct contact with the environment.
c) Cells develop into tissue which in turn develop into organs that later develop into systems.
d) A system consists of a group of tissues involved in a common activity.
e) The nucleus, lysosomes, and the cell membrane are considered the 3 main parts of the cell.

33) Which of the following is true regarding digestive tracts ?

a) Papillae are found projecting from the wall of the reticulum.
b) The rumen is known for its honey comb structure found in its walls.
c) The rumen bulges to the right hand side of the bovine.
d) Grinding structures in farm animals include the omasum and gizzard.
e) The oesophageal (esophageal) gland region is one of the compartments of the bovine stomach.

34 ) What is the most forward bone of the face?

a) Parietal bone.
b) Maxillary bones.
c) Incisive bones.
d) Occipital bone.
e) Temporal bone.

35) Which of the following is true about dressing percentage?

a) Is defined as the live weight divided by the carcass weight percentage.
b) Will decrease in value if there are a lot of gut contents in the animal at slaughter.
c) Will increase in value if lots of visceral fat was removed.
d) Will decrease if the animal has massive bones.
e) Two of the above.

**36) Please mark the version of the exam completed as noted in the upper right hand corner of Page 1:**
**a) A.**
**b) B.**
**c) C.**
**d) D.**

## Part 2: Short answer questions for Exam A. Questions are worth anywhere from 2 to 10 marks

1) List 5 criteria for a good slaughter method **(4 marks)**

**2)** What is a zoonosis and what is it's relevance to the inspection process? **(2 marks)**

**3)** Why are fibroblasts important for both the dermis and hypodermis. **(2 marks)**

4) Using adjectives of position, where is the dock located relative to the metacarpals in lambs**? (2 marks)**

5) What is another name for sweetbreads? **(2 marks)**

6) Describe the visceral pleura found in the pleural cavity? **(2 marks)**

7) Which farm animals do we implant (be very specific with your answer; animal, age class) and why do we implant them (growth and carcass details)? **(3 marks)**

8) Starting with the major blood vessel bringing deoxygenated blood to the heart, list in order all heart structures and blood vessels involved in blood flow through the heart including the major blood vessel that will distribute oxygenated blood to the tissues. **? (6 marks)**

9) The following question has 3 parts which need to be answered to qualify for **10 marks.**

a) Why is tubular secretion necessary

b) Where does it occur primarily?

c) Starting with your answer for b), list in order all the structures in the urinary system that urine will pass through before it is voided from the body in a mammal.

# End of Exam