



**UNIVERSITY OF SWAZILAND**  
**Faculty of Health Sciences**

**DIPLOMA IN ENVIRONMENTAL HEALTH**  
**FINAL EXAMINATION PAPER 2006**

<b>TITLE OF PAPER</b>	:	<b>MEAT PATHOLOGY &amp; SAFETY</b>
<b>COURSE CODE</b>	:	<b>EHS 201</b>
<b>DURATION</b>	:	<b>3 HOURS</b>
<b>MARKS</b>	:	<b>100</b>
<b>INSTRUCTIONS</b>	:	<b>READ THE QUESTIONS &amp; INSTRUCTIONS CAREFULLY</b>
	:	<b>ANSWER ALL FIVE (5) QUESTIONS</b>
	:	<b>EACH QUESTION CARRIES 20 MARKS.</b>
	:	<b>WRITE NEATLY &amp; CLEARLY</b>
	:	<b>NO PAPER SHOULD BE BROUGHT INTO NOR OUT OF THE EXAMINATION ROOM.</b>
	:	<b>BEGIN EACH QUESTION ON A SEPARATE SHEET OF PAPER.</b>

**DO NOT OPEN THIS QUESTION PAPER UNTIL PERMISSION IS GRANTED BY THE INVIGILATOR.**

## Question 1

### Multiple choice question

Choose the most appropriate answer.

1. Which one of these parasitic worms **does not** reside in the lung;
  - A. *Trichinella spiralis*
  - B. *Dictocaulus viviparus*
  - C. *Muellarius capillaris*
  - D. *Metastrongylus salmi*
  - E. *Protostrongylus refescens*
2. Which one of these parasitic worms **does not** reside in human intestines?
  - A. *Taenia saginata*
  - B. *Taenia solium*
  - C. *Diphyllobothrium latum*
  - D. *Ascaris lumbricoides*
  - E. *Echinococcus granulosus*
3. Which one of these parasitic worms **does not** reside in the cattle liver;
  - A. *Fasciola hepatica*
  - B. *Dicrocoelium dendriticum*
  - C. *Paramphistomum cervi*
  - D. *Stilesia hepatica*
  - E. *Fasciol gigantica*
4. Which parasitic worm causes residual lesions or necrosis or fibrosis in the liver ( milk spots)
  - A. *Ascaris suum*
  - B. *Fasciola hepatica*
  - C. *Fasciola gigantica*
  - D. *Dicrocoelium dendriticum*
  - E. *Onchocerca gutturosa*
5. Which of these tap eworms resides in the intestines of ruminants mainly cattle.
  - A. *Thysanosoma actinoides*
  - B. *Stilesia hepatica*
  - C. *Moniezia benedeni*
  - D. *Taenia saginata*
  - E. *Moniezia expansa*
6. A sheep liver which has chronic fascioliasis is;
  - A. Haemorrhagic and covered with fibrin
  - B. Distorted and bile ducts are enlarged, thickened and bluish
  - C. Cirrhotic and bile ducts are thickened, dilated and may calcify
  - D. Swollen and congested
  - E. Pipy or fluky

7. The liver in chronic fascioliasis in cattle is;  
A. Haemorrhagic and covered with fibrin  
B. Distorted and bile ducts are enlarged, thickened and bluish  
C. Cirrhotic and bile ducts are thickened, dilated and may calcify  
D. Swollen and congested  
E. Pipy or fluky
8. Human fascioliasis is due to;  
A. Eating a liver infested with liver flukes  
B. Eating uncooked green leafy salads or grass infested with liver flukes.  
C. Eating uncooked green leafy salads infested with liver fluke cercaria or larvae.  
D. Eating uncooked green leafy salads infested with liver fluke eggs  
E. Eating a liver infested with cercaria or larvae.
9. Which of these tapeworms may infest rabbits or hares;  
A. *Taenia multiceps*  
B. *Taenia hydatigena*  
C. *Taenia saginata*  
D. *Taenia pisiformis*  
E. *Echinococcus granulosus*
10. Which larval stage in *Diphylobothrium latum* is infective in human;  
A. Coracidium larvae  
B. Plerocercoid larvae  
C. Copepods larvae  
D. Proceroid larvae  
E. Cysticercus larvae
11. Coccidiosis in cattle is caused by;  
A. *Coccidia bovis*  
B. *Toxoplasma gondii*  
C. *Eimeria perforans*  
D. *Eimeria stiedae*  
E. *Eimeria zurnii*
12. Toxopasmosis is caused by;  
A. *Coccidia bovis*  
B. *Toxoplasma gondii*  
C. *Eimeria perforans*  
D. *Eimeria stiedae*  
E. *Eimeria zurnii*

13. Which of these diseases result in haemoglobinuria in cattle;
  - A. Coccidiosis
  - B. Heart water
  - C. Babesiasis
  - D. Anaplasmosis
  - E. Toxoplasmosis
  
14. Which of these statements is not correct;
  - A. A goat affected by Heart water disease exhibit a rapid rise in temperature followed by laboured respiration and then muscular tremor
  - B. A sheep affected by Heart water disease show a continual movement of the limbs, head, ears,, tongue and jaw
  - C. Heart water disease is caused by an intracellular parasite, *Cowdria ruminantium*
  - D. The parasite *Cowdria ruminantium* parasitize the red blood cells and set free haemoglobin content resulting in red or bloody urine
  - E. *Boophilus microplus* tick, is a 1-host vector of Red water fever.
  
15. Which one of these statements is not correct about ixodidae ticks;
  - A. Takes small blood meal repeated a number of times
  - B. Large numbers of eggs are laid all at one time after which the female dies
  - C. This ticks are found in both tropics and temperate climates
  - D. Mainly attack cattle
  - E. Mouth parts projects forward and are visible from above.
  
16. The causative agent for bacillary white diarrhoea in poultry is;
  - A. *Salmonella pullorum*
  - B. *Salmonella gallinarum*
  - C. *Heterakis gallinarum*
  - D. *Avian mycoplasmae*
  - E. *Yersinia pseudotuberculosis rodentium*
  
17. Mareks disease in domestic fowl is manifested by;
  - A. Solidification of the yolk
  - B. Nodular lymphoid tumours on the surface of the liver
  - C. Partial or complete paralysis of the wings and legs
  - D. Blood stained contents and minute bluish and whitish foci on intestinal wall
  - E. Liver enlargement with numerous yellow, circular and necrotic areas
  
18. The causative agent for Fowl typhoid is;
  - A. *Salmonella pullorum*
  - B. *Salmonella gallinarum*
  - C. *Heterakis gallinarum*
  - D. *Avian mycoplasmae*
  - E. *Yersia pseudotuberculosis rodentium*

19. Pelagic (middle and surface layers) have about 20% fat in their muscle.  
Which one of these fish fall under this group
- A. tuna
  - B. cod
  - C. haddock
  - D. halibut
  - E. whiting
20. Demersal(found at or near the bottom of the sea) and have less than 5% fat in their muscles.  
Which fish species fall under this group?
- A. tuna
  - B. cod
  - C. herring
  - D. sardine
  - E. mackerel

**[20 Marks]**

### Question 2

During the last five (5) years Swaziland was attacked by Foot Mouth disease, which almost eliminated the cattle stock. This infection has led to the suspension of meat exportation especially to the European Union.

- a) Show the symptoms that are associated with Foot Mouth disease [10]
  - b) What strategies did Swaziland employed to control the disease? [10]
- [20 Marks]**

### Question 3

- a. What action would you take if you discover one cysticercus cyst in the masseter muscle of cattle? [5]
- b. During meat inspection, you find two cysts, one in the heart and another one in the diaphragm. What action would you take and why? [3]
- c. How do cattle acquire *Cysticercus bovis* [2]
- d. Which organs of cattle carcase are most likely to harbour cysticercus bovis cysts? [5]
- e. How would you control human tapeworms? [5]

**[20 Marks]**

#### Question 4

Swazi Poultry Processing Industry has 2000 birds in stock. You have been invited to conduct an ante-mortem inspection. On your arrival you find that at least 1000 of the birds have died and some are dying. The person in-charge of the abattoir tells you that he suspects Newcastle disease.

- a) Describe the signs that would lead you to either confirm or reject his suspicion. [10]
- b) Outline strategies that can be employed to control Newcastle disease. [10]

**[20 Marks]**

#### Question 5

- a) Describe the symptoms that might lead you to suspect *African Swine fever* during ant-mortem examination. [10]
- b) Which postmortem signs are associated with *African Swine fever*? [5]
- c) What measures may be employed in the control of *African swine fever*? [5]

**[20 Marks]**