

**Each multiple choice has one best answer.  
Please indicate your one (1) choice on the scantron provided.**

1. Most mites that infect mammalian companion and production animals spend their entire life cycle on the host. However, the poultry mite that can cause severe anemia is often found in roosting areas, off the host. Which one of the following is that mite?
  - A. *Demodex*
  - B. *Otodectes*
  - C. *Dermanyssus*
  - D. *Sarcoptes*
  
2. *Sarcoptes scabiei* infects many different mammalian hosts as species specific varieties or subspecies. These mites borrow deep into the dermis where all of their life stages can be found. What one, predominant, clinical sign is associated with scabies mite infections?
  - A. anemia
  - B. erythema or red skin
  - C. itching, signs of self trauma from scratching
  - D. large pustules in the skin
  
3. The most common pathological consequence of heavy flea infestation is what?
  - A. the threat of transmission of highly infectious blood-borne diseases.
  - B. anemia
  - C. skin lesions from flea bite allergy
  - D. flea paralysis
  
4. Spread of infestation with most lice is dependent on close contact between animals such as occurs during winter housing. What aspect of the louse life cycle is a cause of this dependence?
  - A. lice nits are tightly cemented to hairs or feathers
  - B. nymph stages require about 3 weeks to become adult lice
  - C. adult lice feed on skin debris or blood
  - D. the entire life cycle is spent on the host
  
5. Neighbors of a dairy complained to the farm manager that during the summer when seated outside they would frequently experience painful fly bites that they suspected were coming from his farm. The manager assured his neighbors that he was controlling flies by giving his cows an in-feed insecticide that kills developing larvae in cattle manure, and he had seen a major reduction in flies on the faces and backs of his cattle. However, the neighbors continued to experience fly bites. Which fly is likely to be the source of the neighbors' irritation?
  - A. *Musca domestica*
  - B. *Stomoxys calcitrans*
  - C. *Musca autumnalis*
  - D. *Haematobia irritans*

PLEASE PRINT CLEARLY

6. Many of the blow flies or bottle flies (family Calliphoridae) that are easily recognized as adults by their shining metallic coloration are very common and do not usually cause disease. What circumstances and stage of the fly are most often encountered by a veterinarian in practice?
- A. cattle or sheep owner complaints about fly bother due to adult fly behavior
  - B. need for treatment of horses due to presence of stomach bots
  - C. treatment to remove bot from subcutaneous cyst on outdoor cat.
  - D. presence of maggots under matted hair or wool, usually associated with a debilitated animal with necrotic tissue
7. The primary screwworm fly, *Cochliomyia hominivorax*, is an important parasite whose maggots invade and eat away living tissue of warm-blooded animals. It has been effectively eradicated from the USA, but persists in Mexico and countries of Latin America and South America. Eradication was accomplished by release of sterilized male fly pupae over large areas of southern states in the USA. Female flies that mate with sterile males produce sterile offspring. What one aspect of the screwworm life cycle allowed this eradication strategy to work so well?
- A. a very short life span of the adult female fly
  - B. the maggot stage has a very long life span
  - C. adult female flies copulate only once
  - D. sterile male flies can not fly
8. In areas of where *Hypoderma bovis* or *H. lineatum* (cattle grub or heel fly) are prevalent there is concern among large animal practitioners to not delay treatment to kill migrating larvae as soon as the adult fly season is finished. What is the basis for this concern?
- A. drug efficacy against late stage migrating larvae is much less than against early stage larvae.
  - B. later stage larvae migrate through the wall of the esophagus or the spinal canal where dead larvae from delayed drug treatment cause tissue reactions leading to bloat or paralysis.
  - C. late stage larvae secrete toxins leading muscle paralysis
  - D. late stage larvae sensitize the host to have immediate type hypersensitivity reactions even without drug treatment
9. Which one of the following does the adult female fly NOT come in contact with the host, and thus does NOT deposit its nits or larvae directly in or on the host.
- A. *Hypoderma bovis*, cattle grub
  - B. *Gasterophilus intestinalis*, horse bot
  - C. *Oestrus ovis*, sheep bot
  - D. *Cuterebra emasculator*, rodent bot
10. *Strongyloides sp.* are exceptional among the parasitic nematodes covered in this course. What makes this genera of parasitic nematodes exceptional?
- A. the parasitic adult female worm is found in the small intestine
  - B. infective larvae can infect by skin penetration
  - C. adult male and female free-living (non-parasitic) worms mate and produce offspring outside of the host
  - D. infective larvae can pass from mother to babies by lactogenic route of infection

11. An autopsy in September of a three year old ewe that has been grazing the same pasture during May to August in Wake county, NC shows 1.5 cm long nematodes on the surface of the abomasum. What genus of nematode is this most likely to be?
- A. *Haemonchus*
  - B. *Cooperia*
  - C. *Nematoduris*
  - D. *Dictyocaulus*
12. An autopsy in September of a 9 month old Holstein calf that has been grazing on the same pasture with 1.5 – 2 year old calves during April to August in central North Carolina shows 1 cm long nematodes on the surface of the abomasum. What genus of nematode is this most likely to be?
- A. *Haemonchus*
  - B. *Ostertagia*
  - C. *Nematoduris*
  - D. *Dictyocaulus*
13. An autopsy in September of a 3 year old mare that has been grazing on the same pasture during April to August with many horses of various ages shows 1 – 1.5 cm long nematodes on the mucosal surface of the large intestine. The horses were treated with the anthelmintic Panacur twice a year (March and September before this autopsy). Several horses, including the one at autopsy, had fecal egg counts of strongyle-type ova greater than 1000 eggs per gram. What genus or group of nematodes is this most likely to be?
- A. *Strongylus*
  - B. *Trichostrongylus*
  - C. *Parascaris*
  - D. small strongyles such as *Cyathostomum* and *Cylicocyclus*
14. Grazing pastures is the only route of infection for the trichostrongyle nematodes that infect small ruminants and cattle, and the large and small strongyles that infect horses. What are the environmental parameters that influence the development of ova to infective larvae outside of the host?
- A. trees or small bushes at the edge of the pasture
  - B. constantly wet, standing water, somewhere in the pasture
  - C. climate providing warmth and moisture sufficient for larval development and movement on herbage
  - D. heavily thatched pastures that support large populations of plant mites
15. Clinical signs of *Ostertagia* infection in calves appear toward the end of their first year of grazing on a pasture (no rotation of pastures). Why do clinical signs appear at the end of the grazing season?
- A. nutritional value of pastures at the end of the season is greatly decreased and causes lower resistance to infection in calves at this time
  - B. shorter grass length causes calves to graze closer to the ground
  - C. infective larval numbers on pastures increase during the grazing season due to increasing adult worm burdens producing more ova to contaminate the pasture
  - D. many infective larva are present on pasture early in the grazing season but grass growth is inadequate for transmission

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16. Which parasitic nematode of horses causes damage to the cranial mesenteric artery near its junction with the aorta?
- A. *Strongylus vulgaris*
  - B. small strongyles (*Cyathostomum* and *Cylicocyclus*)
  - C. *Dictyocaulus arnfeldi*
  - D. *Strongyloides westeri*
17. Some parasitic nematodes have larval stages in the primary host (host where adult worm is found) that are metabolically active (not in arrested development) and can be killed by anthelmintic drugs. Killing larval stages and adult stages with one treatment allows control strategies for preventing contamination of the environment to be based on the prepatent time of the parasite. What is the prepatent time for *Strongylus vulgaris* in horses?
- A. 1 month
  - B. 2 weeks
  - C. 6 months
18. What is the prepatent time for *Parascaris equorum* in foals?
- A. 10 days
  - B. 80 days
  - C. 180 days
  - D. 360 days
19. What is the prepatent time for *Toxocara canis* in new born puppies infected in utero?
- A. 10 days
  - B. 3 weeks
  - C. 8 weeks
20. What is the prepatent time for small strongyles in horses when not arresting?
- A. 10 days
  - B. 3 weeks
  - C. 2.5 to 3 months
21. Which tick has the common name black-legged tick or deer tick?
- A. *Ixodes scapularis*
  - B. *Rhipicephalus sanguineus*
  - C. *Dermacenter variabilis*
  - D. *Amblyomma americanum*

22. Which tick has the common name lone star tick?

- A. *Ixodes scapularis*
- B. *Rhipicephalus sanguineus*
- C. *Dermacenter variabilis*
- D. *Amblyomma americanum*

23. Which tick has the common name brown dog tick or kennel tick?

- A. *Ixodes scapularis*
- B. *Rhipicephalus sanguineus*
- C. *Dermacenter variabilis*
- D. *Amblyomma americanum*

24. Which tick has the common name American dog tick?

- A. *Ixodes scapularis*
- B. *Rhipicephalus sanguineus*
- C. *Dermacenter variabilis*
- D. *Amblyomma americanum*

25. You are presented with a two week old puppy showing signs of very severe anemia. You suspect infection with *Ancylostoma caninum* but fecal exam shows no hookworm ova. What is your first action?

- A. begin bottle feeding the puppy to avoid further infection
- B. move the litter of puppies to a new litter box to avoid further infection
- C. immediately treat the puppy with an anthelmintic drug such as pyrantel
- D. check the mother's feces for hookworm ova

26. A two year old dog was adopted from a shelter three weeks after entering the shelter. It has no history of monthly prophylaxis treatment for heartworm but the shelter deworms all dogs for enteric nematodes when they enter. The shelter is well maintained and runs are cleaned daily. The new owner brings the dog to your clinic two days after bringing the dog home and fecal flotation shows hookworm ova. What is the most likely explanation for this finding?

- A. the dog was re-infected by ingestion of fresh feces from a dog in the same run
- B. anthelmintic drug resistant strains of hookworm are common and this dog was infected with one
- C. infective larvae of hookworm are passed in fresh feces and these re-infected the adopted dog by skin penetration even though the runs were cleaned daily
- D. arrested hypobiotic larvae replaced adult worms removed by the initial deworming

27. *Ancylostoma caninum* is essentially species specific for dogs and *Ancylostoma tubaeforme* is species specific for cats. How do these two nematodes differ in the route of infection for their respective hosts?

- A. the lactogenic route of infection is very important for puppies, whereas there is little or no lactogenic infection of kittens
- B. a fetus in a pregnant cat can be infected but not in a dog
- C. a fetus in a pregnant dog can be infected but not in a cat
- D. skin penetration is the primary route of infection for cats but does not occur in dogs

28. Many of the mammals of veterinary importance, including both companion and production animals, are infected by species specific ascarid nematodes. The life cycles can differ markedly with regard to routes of infection and larval migration depending on the host. However all ascarids infecting mammals covered in this course and of primary veterinary importance have the adult stage in what organ?
- A. large intestine
  - B. lungs
  - C. small intestine
  - D. liver
29. *Ascaridia galli* is an ascarid common in organically ranged-reared chickens. What pathological changes are caused by this nematode?
- A. young birds, under 3 months, hemorrhagic enteritis, diarrhea and intestinal blockage
  - B. older birds, blockage of the trachea, respiratory distress
  - C. older birds, inflammation of the cecum, concurrent protozoal infection causing necrosis of the cecum and liver.
30. Which one of the following genera of adult nematodes causes hemorrhagic colitis in dogs and pigs?
- A. *Oesophagostomum*
  - B. *Strongyloides*
  - C. *Trichuris*
  - D. *Trichostrongylus*
31. What is the risk of establishing an adult worm infection of *Dirofilaria immitis* by transfusing blood from a microfilaremic dog to a non-infected dog?
- A. no risk
  - B. moderate risk, depending on age of recipient
  - C. high risk
32. Prior to treatment of a heartworm infected dog with the adulticide Immiticide it is recommended that the dog be on monthly prophylaxis for two months. Why?
- A. monthly prophylaxis clears highly pathogenic microfilariae
  - B. monthly prophylaxis prevents replacement of adult worms with migrating L4 larvae that are not killed by the adulticide treatment
  - C. monthly prophylaxis will remove enteric nematodes and reduce stress on the dog
33. Cats can show clinical signs of heartworm infection at two stages of infection, one stage is at the death of adult heartworms that results in pulmonary thromboembolism from degenerating adult worms, the other stage results in asthma-like signs. What stage of infection is associated with asthma-like signs?
- A. arrival of immature adult worms (early L5) in pulmonary arteries and arterioles at about 3 to 4 month post infection
  - B. migrating L4 in fascial tissue of the thorax at about 1 to 2 months post infection
  - C. allergic hypersensitivity to infective larvae (L3) in the skin at less than a week post infection