1. When considering applying poultry litter as fertilizer, on average, it is assumed that nitrogen percentage in commercial broiler litter is approximately _____ %.
    a. 1.4-2.2
    b. 0.9-1.2
    c. 3.5-4.0
    d. 15
    e. None of the above

2. Which of the following is the correct genus and species for the domestic chicken?
    a. *Numinda meleagris*
    b. *Meleagris gallapavo*
    c. *Gallus gallus*
    d. *Phasianus colchicus*
    e. *White rock × Cornish*

3. The body temperature of domestic poultry is high compared to other livestock. What is the typical range of body temperature?
    a. 80 – 85^{o}F
    b. 98.6 – 99.9^{o}F
    c. 40.6 – 41.7^{o}F
    d. 105 – 107^{o}F
    e. 110 – 112^{o}F

4. The breast fillet, also known as the *Pectoralis major,* is responsible for which of the following body actions?
    a. Flexes the abdomen
    b. Depresses the wing
    c. Elevates the wing
    d. Rotates the humerus
    e. Moves the scapula

5. Chickens and turkeys are more sensitive to the _____ portion of the light spectrum than to the _____ portion.
    a. Red, Blue
    b. Red, Green
    c. Blue, Red
    d. Green, Red
    e. None of the above

6. The reproductive tract of the chicken is a highly specialized organ. During egg formation the _____ forms the two shell membranes
    a. Infundibulum
    b. Magnum
    c. Isthmus
    d. Uterus
    e. Vagina

7. Amino acids that can be manufactured in the body of monogastric animals are called _____.
    a. Water soluble vitamins
    b. Essential amino acids
    c. Fat soluble vitamins
    d. Methionine and cysteine
    e. Non-essential amino acids

8. _____ are organic compounds that include sugars, starches, celluloses and gums.
    a. Carbohydrates
    b. Fats and oils
    c. Minerals
    d. Vitamins
    e. Proteins

9. Minerals are essential components of bodily substances and help regulate many activities of metabolism. Which of the following is not a macro mineral?
    a. Calcium
    b. Phosphorus
    c. Magnesium
    d. Iron
    e. None of the above

10. Modern poultry diets are formulated based on the _____ content of the diet which represents _____ available from the diet to fuel metabolism within the bird.
    a. Limiting amino acid, lysine
    b. Total amino acid, digestible amino acids
    c. Metabolizable energy content, energy
    d. Macro mineral content, calcium
    e. Vitamin content, thiamine

11. When an egg is laid cell division stops when the egg temperature drops below _____.
    a. 103°F
    b. 85°F
    c. 98°F
    d. 110°F
    e. 72°F

12. The embryonic membrane known as the _____ helps prevent physical injury to the embryo and keeps the embryo bathed in fluid.
    a. Chorion
    b. Chorioallatoic
    c. Amnion
    d. Shell
    e. None of the above

13. During embryonic development each somite differentiates into three distinct kinds of cells, cells that become the sclerotome will form _____.
    a. Skeleton
    b. Muscle
    c. Brain and spinal cord
    d. Skin
    e. None of the above

14. If a hen does not receive enough _____ and _____ in the feed she will not lay an egg.
    a. Calcium, protein
    b. Calcium, amino acids
    c. Calcium, trace minerals
    d. Amino acids, phosphorus
    e. Calcium, phosphorus

15. _____ is the ability of an organism to produce disease in poultry.
    a. Infectious dose
    b. Pathogenicity
    c. Zoonotic disease
    d. Vector
    e. Both A and B

16. _____ are microscopic, single-celled organisms that can be free-living or parasitic in nature.
    a. Viruses
    b. Bacteria
    c. Mycoplasma
    d. Protozoa
    e. None of the above

17. Which of the following is a major component of biosecurity?
    a. Isolation
    b. Traffic control
    c. Sanitation
    d. All of the above
    e. None of the above

18. Infectious disease can be spread from farm to farm by which of the following?
    a. Shoes and clothing of visitors or caretakers who move from flock to flock
    b. Impure water
    c. Rodents
    d. Insects
    e. All of the above

19. Vaccines can be administered to commercial chickens and turkeys through a variety of routes. Which of the following is not a common route of vaccination?
    a. Drinking water
    b. Intraocular
    c. Intramuscular
    d. Intranasal
    e. Spray

20. _____ is a voluntary cooperative federal, state and industry program designed to prevent the spread of poultry diseases in commercial poultry operations.
    a. National Poultry Improvement Plan
    b. National Animal Health Laboratory Network
    c. Food and Drug Administration
    d. Center for Veterinary Medicine
    e. Food Safety Inspection Service

21. For commercial broilers, what is the appropriate time of feed withdrawal prior to processing?
    a. No feed withdrawal required
    b. 3-6 hours
    c. 6-8 hours
    d. 8-12 hours
    e. 24 hours

22. Commercial broilers are processed to meet a variety of market demands. Younger, smaller birds are typically reared to meet which market demand?
    a. Further processing market
    b. Fast food market
    c. Whole bird market
    d. International market
    e. All of the above

23. Reducing carcass temperature is a critical step in processing. Birds must be chilled below 40oF within _____ hours, depending on carcass weight.
    a. 1-2
    b. 3-6
    c. 4-8
    d. 8-10
    e. 15-20

24. Today, less than _____% of the chickens in the US are sold as whole birds.
    a. 1
    b. 5
    c. 10
    d. 20
    e. 30

25. Which of the following is NOT a benefit of mechanical ventilation in a poultry house?
    a. Mixes fresh air from outside air to maintain uniform environment
    b. Controls moisture level
    c. Increases labor requirements
    d. Permits increased quality of birds raised in a building
    e. Allows use of light controlled and windowless operations

26. Poultry waste is mainly used as fertilizer (or as soil amendment) on land. For a broiler farm that has 4 commercial houses holding 24,000 birds each grown to 6 weeks of age, what is the total amount of phosphorus in pounds applied to the land from all four of these houses if all of the litter is applied to surrounding fields.
    Additional information:
    Daily feed intake: 28 lbs/100 birds
    Daily manure output: 32 lbs/100 birds
    Litter produced: 1 ton/200 birds (2,000 lb/1 ton)
    Analyzed Phosphorus content in litter: 0.9%
    a. 53,333 lb P
    b. 376.5 lb P
    c. 6,456 lb P
    d. 8,640 lb P
    e. Not enough information provided

27. In a broiler starter diet, 22% protein is ideal to meet growth and protein accretion requirements. If two available ingredients to be included in the diet are soy bean meal (48% protein) and corn gluten feed (18% protein). What percentage of soybean meal will be used in the diet to meet protein requirements?
    a. 13.3%
    b. 25.2%
    c. 50.9%
    d. 62.8%
    e. 86.6%

28. Incidence of *Salmonella* in a poultry processing plant must be below 10% carcasses testing positive. If in one day, 200,000 birds are processed and *Salmonella* incidence is 0.5% how many carcasses were affected by the bacteria?
    a. 500
    b. 1,000
    c. 20,000
    d. 100,000
    e. Not enough information provided

29. From one commercial broiler complex average breast yield is 24.6 of live weight. If on one farm there are 6 houses with 25,000 birds placed per house, and birds are reared to a live weight of 7.5 lb. How much breast meat in pounds is produced by this one flock?

    Additional information: Flock mortality was 3.5 %

    a. 276,750 lb
    b. 267,063.8 lb
    c. 35,608.5 lb
    d. 305,906.8 lb
    e. 426,525.7 lb

30. The goal for winter tunnel ventilation of poultry houses is to maintain the desired temperature and humidity of the building while supplying fresh air and protecting the birds from sudden temperature changes. In January, a commercial house containing 26,000 broilers that are approximately 4.5 lb on average is using tunnel ventilation. Given the following requirements what is the **total** air flow that should be moving through the house to maintain appropriate conditions.

Bird Weight (lb)	Air Flow (CFM per bird)
3.0	1.8
4.0	2.2
5.0	2.6

    a. 46,800
    b. 57,200
    c. 62,400
    d. 67,600
    e. Not enough information provided