National FFA Poultry Evaluation CDE
2011 Written Examination Key

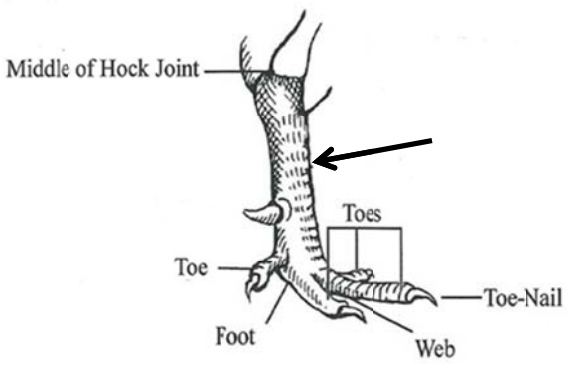
Directions: Please, read each item carefully. Using a No. 2 pencil, bubble the letter on your scan sheet that corresponds with the correct answer.

1) Pullets being raised for table egg production are raised from hatching to _____ in their growing facilities.

   a. 18 to 20 weeks of age
   b. 16 to 17 weeks of age (C-3)
   c. 13 to 14 weeks of age
   d. about 27 weeks of age or peak production

2) The area to which the arrow points in the drawing below contains which bone(s)?

   a. tibia
   b. metatarsal
   c. radius and ulna
   d. tarsometatarsus (C-19)



3) The epidermis in the feathered parts of a fowl's body is characterized as

   a. keratinized horny materials.
   b. thin and scaly. (C-16)
   c. modified scales.
   d. fascia tissue.

4) Molting in the chicken is

   a. shedding of feathers. (C-16)
   b. coloring characterized as blotching or uneven in surface color.
   c. fungal growth on front of the neck and around the beak or bill.
   d. really a mottled feather covering due to poor care and feeding.

5) What is the name of the small, oil-secreting gland located under the skin at the rear of the bird's back immediately before the main tail feathers?

a. ischium
b. uropygial (C-17)
c. pygostyle
d. scent gland

6) The bones of a bird's wing tips, which correspond to bones in the digits of the human hand, are called

a. phalanges. (C-19)
b. phalanxes.
c. patellas.
d. pubium.

7) Rupture of the follicular membrane along the stigma of a developed yolk is a step in which process?

a. ovulation (C-23)
b. oviposition
c. blood spot development
d. hatching

8) During formation of the egg in the oviduct, the developing egg spends the most time in which section?

a. isthmus
b. uterus (C-24)
c. infundibulum
d. magnum

9) Which answer below is <u>not</u> a main function of the bird's urinary system?

a. filtration of water and other substances from the blood
b. transport of endocrine secretions (C-25)
c. excretion or secretion of waste products of metabolism
d. absorption and reabsorption of body water, glucose, sodium, and other substances

10) When an egg is laid, which condition is true?

a. If the egg is fertile, the blastoderm has formed. (C-29)
b. For the infertile egg, the blastoderm has formed.
c. By the time an egg is laid, the number of cells present ranges from 150-600.
d. In an egg stored above 85^{o}F, cell division ceases.

11) During incubation of the chicken egg, all parts of the developing chick are present by which day of incubation?

a. day 7
b. day 10 (C-32)
c. day 14
d. day 18

12) In commercial poultry, malformation and malposition of incubating eggs account for a decrease in overall hatchability by approximately what percentage?

a. 5% (C-34)
b. 10%
c. 15%
d. 20%

13) Which sanitation product/procedure is the most effective for "clean" surfaces when maintaining sanitary conditions of poultry houses and equipment?

a. using chlorine-based compounds (C-39)
c. using quaternary ammonium compounds
d. relying on time, freezing and thawing, and sunshine
e. scrubbing surfaces thoroughly with soap and hot water

14) Which poultry disease is caused by a protozoan?

a. cholera
b. infectious coryza
c. Marek's
d. Blackhead (turkeys) (C-41)

15) Which statement is the most accurate in regard to leg disorders of commercial poultry?

a. Infectious agents may be the direct or indirect cause.
b. In most cases, treatments are ineffective and will not remedy the problem, except when used as an early response to birds displaying rickets.
c. The largest, fastest growing males in the flock are usually the birds affected with leg problems.
d. **All of the above answers are accurate (C-44)**

16.) For a broiler operation using a wooden walled storage building for "dry-stack" manure storage, the operator strives to manage the material stored in the building to keep it dry and limit the depth to a maximum of 5 feet for what reason?

a. odor issues and related control
b. to avoid breaking down of the storage walls
c. fire prevention (C-48)
d. ensure ease of access to the facility

17. With a lagoon for poultry manure waste treatment, up to _____ % of the nitrogen is lost from the waste through volatilization and to settling, and approximately _____ % of the phosphorus from the waste settles within the sludge at the bottom of the lagoon.

    a. 10, 30
    b. 20, 40
    c. 30, 10
    d. 70, 90 (C-51)

18. You should expect an analysis of the calcium content of broiler and turkey manure to range from about

    a. 1.0% to 2.5%. (C-53)
    b. 3.3% to 4.8%.
    c. 0.01% to 0.05%.
    d. 7.2% to 8.4%.

19. Which term means the study of moist air and changes in its conditions?

    a. barometry
    b. pneumometry
    c. psychrometry (C-59)
    d. thermometry

20. As a rule of thumb, 7000 grains of water vapor equals 1 pound of water, and 1 pound of air at a normal building temperature occupies nearly _____ cubic feet of space.

    a. 5
    b. 13.5 (C-59)
    c. 135
    d. 1,728

21. In theory, the _____ indicates to what _____ evaporative cooling can cool air.

    a. wet bulb temperature; relative humidity
    b. relative humidity; wet bulb temperature
    c. dry bulb temperature; relative humidity
    d. wet bulb temperature; dry bulb temperature (C-62)

22. A bird loses heat mainly by _____ to cooler air and by _____ to cooler surrounding surfaces.

    a. radiation; convection
    b. convection; radiation (C-65)
    c. radiation; effusion
    d. diffusion; absorption

23. For the evaporative cooling system of fans and wet pads to work well in a poultry building, which condition is a requirement?

    a. The building should be no more than 400 feet long.
    b. Blasts of high velocity air into the building are necessary for proper bird cooling.
    c. The cooling system's water should be chilled before being (re)circulated.
    d. The building needs to be sealed tightly except for the fan and pad areas (C-69,70,71)

24. In poultry product processing, most chickens (broilers) go to the processing plant at

    a. 1 to 2 months of age
    b. 35 to 47 days or about 6 weeks of age (C-73)
    c. 18 to 20 weeks of age
    d. 14 to 16 weeks of age

25. Today, most poultry meat consumed in the United States is produced by chickens and turkeys selected specifically for rapid growth as well as

    a. plumage color and tail angle.
    b. optimum feed conversion. (C-79)
    c. shank and earlobe color.
    d. the bird's ability to utilize low quality nutrient sources.

26. In a broiler house, at a certain point in production the amount of manure produced is 0.3 pounds/bird/day. The manure contains 1.5% nitrogen, and the total amount of nitrogen produced in the house daily is 90 pounds. How many birds does the broiler house contain?

    a. 1,800
    b. 15,000
    c. 17,775
    d. 20,000 (C-53,54)

27. A broiler house contains 30,000 birds weighing an average of 5 pounds/bird, and the hot weather ventilation recommendation for birds of this size is 5 cubic feet of air/minute. The house contains ventilation fans that are each capable of moving 25,000 cubic feet of air/minute. In order to meet the hot weather ventilation recommendation, how many fans need to run?

    a. 1
    b. 6 (C-68)
    c. 10
    d. 30

30,000 birds x 5 cfm/bird x 1 fan/25,000 cfm = 6 fans

28. A turkey house is equipped for tunnel ventilation, with 8 outward-facing fans (each capable of moving 25,000 cubic feet of air/minute) at one end of the house, and a pad system at the other end of the house. The pad system is evenly divided, with half of the pad on one sidewall, and the other half of the pad on the opposite sidewall. For hot weather cooling, it is recommended that there be at least 1 square foot of pad space for every 250 cubic feet/minute of air movement. When all fans are in operation, if the pads are 5 feet high, how long should the pad on each side of the house be?

a. 80 feet (C-68-69)
b. 100 feet
c. 160 feet
d. 1600 feet

Total air movement = 8 fans x 25,000 cfm/fan = 200,000 cfm
Square feet of pad needed = 200,000 cfm x 1 square foot/250 cfm = 800 square feet
Length of pad = 800 square feet/5 feet high/2 sides = 80 feet

29. A flock of broilers has an average weight of 6 pounds per bird, and there are 25,000 birds in the house. The dressing percentage (without giblets, or WOG) is expected to be 65%, and the breast yield is expected to be 32% of the carcass WOG weight. If breast meat is valued at $1.50 per pound, what is the expected total value of breast meat produced by this flock?

a. $146,250
b. $72,000
c. $46,800 (C-79)
d. $20,800

25,000 birds x 6 lb/bird x 65% WOG yield x 32% breast yield = 31,200 lb breast meat
31,200 lb x $1.50/lb = $46,800

30. A certain broiler company expects to produce 1,000,000 birds per week, and typically loses 1% of all birds due to leg problems. The average live weight of birds at the time of processing is 5 pounds/bird, and the dressing percentage (without giblets, or WOG) is expected to be 62%. If the carcass value (WOG) is $0.75/pound, calculate how much money **every year** would be represented by the loss of these birds with leg problems compared to expected value if they were able to produce these as normal broilers.

a. $1,950,000
b. $1,209,000 (C-43)
c. $87,500
d. $23,250

1,000,000 birds x 1% = 10,000 birds lost/week
10,000 birds x 5 pound/bird x 62% WOG yield x $0.75/pound = $23,250 lost/week
$23,250/week x 52 weeks/year = $1,209,000 lost per year

National FFA Poultry Evaluation Career Development Event
2012 Written Exam With Answers and References

Directions: Please read each item carefully. Using a No. 2 pencil, bubble the letter on your scan sheet that corresponds with the correct answer.

1) The Animal Welfare Code of Practice, as recommended by the Farm Animal Welfare Council, stipulates that the maximum stocking density in pounds of broiler birds per square foot in broiler houses should be

   a. 3 lb
   b. 7 lb
   c. 11 lb
   d. 14 lb

B C-117

2) Which of the following is a recommended practice when receiving broiler chicks?

   a. Preheat building, provide fresh water and feed immediately before the chicks are placed.
   b. Turn on heat, place fresh water and feed immediately before the chicks are placed.
   c. Withhold feed and water until the chicks settle.
   d. Withhold feed until the chicks settle and provide chilled water.

A C-118

3) Which of the following feed types is preferred for broiler chicks during the first few weeks of feeding?

   a. mash
   b. crumbles (fine to coarse)
   c. pellet
   d. crystals

B C-121

4) Seven-day old broiler chick weight is an excellent indicator of brooding success. This weight should be what in relation to one-day old chick weight?

   a. 2 to 3 times more
   b. 4 to 5 times more
   c. gain back to chick hatching weight
   d. None of the answers listed above are correct.

B C-122

5) Most broilers are grown

a. in continuous light with a period of darkness provided daily.
b. in continuous light.
c. in total darkness to reduce energy usage.
d. with lighting intensity of a minimum of 20 lux.

A C-125

6) At the recommended stocking rate, approximately how many turkeys would be moved from a brooding house and placed into a 50 feet wide x 500 feet long growing house?

a. approximately 8,300 hens or 5,000 toms
b. approximately 16,600 hens or 10,000 toms
c. approximately 13,300 poults if sexes are mixed
d. 1 poult for each square foot of growing space

A C-138

7) Modern turkeys grow rapidly. A one-day-old tom poult weighs approximately _____ and a 21-week-old tom may exceed _____.

a. 0.1 lb.; 28 lb.
b. 0.25 lb.; 40 lb.
c. 1 lb.; 28 lb.
d. 0.5 lb.; 30 lb.

B C-139

8) In general, a contract turkey grower should expect the largest percentage of his or her production cost to be _____

a. labor.
b. debt service.
c. taxes and insurance.
d. energy.

B C-142

9) Which of the following vaccinations is given to egg-strain (commercial), pullet chicks via subcutaneous injection to the back of the neck while at the hatchery?

a. Newcastle/Infectious bronchitis
b. Marek's disease
c. Laryngotracheitis (LT)
d. Fowl pox

B C-147

10) Ideally, egg-strain pullets are moved from pullet facilities to the laying house at what age?

a. 16 to 18 wks.
b. 20 to 24 wks.
c. 6 months
d. When the average egg weight for the flock reaches "large."

A C-152

11) The main "greenhouse gases" (GHGs) associated with animal production are

a. carbon monoxide, methane, and nitrous oxide.
b. carbon dioxide and ammonia.
c. carbon dioxide, methane, and nitrous oxide.
d. None of the gases listed above are major contributors to the "Carbon Footprint" of the food animal industry.

C C-154

12) A common feed blend for egg laying hens would be which of the following mixtures?

a. 67% corn, 22% soybean meal, 8% limestone, and 3% other ingredients
b. 50% corn, 22% soybean meal, 25% limestone, and 3% other ingredients
c. 50% soybean meal, 22% corn, 25% limestone, and 3% other ingredients
d. None of the blends listed above are fed commonly to egg laying hens.

A C-160

13) The onset of sexual maturity (egg laying) in growing pullets of egg laying strains depends on certain requirements or criteria. The criteria include

a. minimum age and body weight.
b. constant or increasing day length of at least 12 hrs.
c. adequate nutrient consumption, including energy.
d. All of the criteria listed above are necessary for the onset of sexual maturity in pullets.

D C-163

14) Large Fowl, American class, breeds of chickens have the following characteristics:

a. yellow skin, red ear lobes, and brown shell eggs.
b. white skin (with exceptions), red ear lobes, and brown shell eggs.
c. white ear lobes, white shell eggs, and unfeathered shanks.
d. feathered shanks, red ear lobes, and brown shell eggs.

A C-173

15) Toulouse, Emden, and African are breeds of

a. heavy-weight class geese.
b. medium-weight class geese.
c. light-weight class geese.
d. heavy-weight class ducks.

A C-182

16) Career opportunities in the poultry industry

a. include opportunities not only directly in poultry production but in related industries, such as pharmaceuticals, genetics, nutrition, engineering, and agribusiness.
b. are limited in opportunity for diverse careers and college trained personnel.
c. require in-depth and specific training eliminating the need for a general background understanding of poultry science.
d. None of the career information listed above is associated with the poultry industry.

A C-7 through C-12

17) The bird's wing tip includes which bones?

a. phalanxes
b. ulna and radius
c. phalanges
d. All of the bones listed above are found in the wing tips of birds.

C C-19

18) In the fowl, air sacs

a. function as sites of gaseous exchange.
b. function as the voice box.
c. are unique to birds and certain reptiles.
d. determine the interior quality of an egg.

C C-20

19) The oviduct of an in-lay laying hen would measure about _____ in length?

a. 51 cm (20 in)
b. 78 cm (30 in)
c. 102 cm (40 in)
d. 127 cm (50 in)

B C-23

20) In which section of the oviduct of the hen would fertilization take place?

a. vagina
b. uterus
c. infundibulum
d. cloaca

C C-24

21) Which membrane of the egg must the spermatozoan penetrate for fertilization of a poultry egg to occur?

a. inner shell membrane
b. vitelline membrane and penetrate the blastodisc
c. blastodermal membrane
d. vaginal membrane

B C-27 and C-28 Figure 2

22) Which of the following statements regarding chick embryonic development is <u>not</u> true?

a. Nutritional deficiencies in the hen's diet may affect embryonic development.
b. Analysis of the time or stage of embryonic development may be helpful in diagnosing hatchability problems relating to nutrition.
c. Toxic compounds may enter the egg either from the hen's diet or from the environment surrounding the egg.
d. The diet of the hen does not influence embryonic mortality.

D C-35 & 36

23) Pathogens are

a. harmful micro-organisms that are infectious and cause diseases.
b. carriers that transmit infective agents.
c. any birds presenting symptoms of disease.
d. any departure from health with a specific cause and signs, including such conditions in poultry.

A C-39

24) Morbidity rate is the

a. rate of death loss in a flock of birds.
b. frequency of birds in a flock displaying signs of disease.
c. percentage of healthy birds minus the rate of mortality in a flock.
d. None of the answers listed above are correct.

B C-57

25) The main use of poultry waste such as used litter is for

a. fertilizer (soil amendment).
b. a feedstuff in ruminant nutrition.
c. lawn care treatment.
d. a source of non-organic nitrogen for use in aquaculture (fish farming).

A C-70

26) On a commercial turkey farm, hens are grown to an average final body weight of 27 pounds. If the average feed conversion over the hens' lifetime was 2.24, approximately how many birds could be grown with each ton of feed?

a. 10 birds
b. 22 birds
c. 33 birds
d. 166 birds

C based on page C-139

27 pounds x 2.24 pounds of feed/pound of gain = 60.48 pounds of feed per bird
2,000 lbs x 1 bird/60.48 pounds of feed = ***33 birds***

27) A broiler farm contains houses measuring 50 feet wide x 500 feet long. In each house, bird density is 0.88 square feet per bird. If the total live weight produced PER HOUSE is 170,000 pounds, what is the approximate average body weight per bird?

a. 7.7 pounds
b. 6.0 pounds
c. 5.2 pounds
d. 4.5 pounds

B based on page C-117

50 x 500 = 25,000 square feet x 1 bird/0.88 square feet = 28,409 birds in the house
170,000 pounds/28,409 birds = 5.98 pounds per bird ***~ 6.0 pounds***

28) In a broiler facility, to accommodate waterers, foggers, and the cooling pad system, the pumping capacity of the water system should be 18 gal/min per 25,000 square feet of floor area. Given that a gallon of water weighs 8.34 pounds, in a broiler house measuring 50 feet x 600 feet, how many minutes would it take approximately to pump 2,000 pounds of water?

a. 11 minutes
b. 13 minutes
c. 105 minutes
d. 180 minutes

A based on page C-123

50 x 600 = 30,000 square feet
(30,000/25,000) x 18 gal/min = 21.6 gal/min (adjusted pumping capacity)
21.6 gal/min x 8.34 pounds/gal = 180.144 pounds/min
2,000 pounds x 1 min/180.144 pounds = 11.1 min ***~ 11 minutes***

29) At the beginning of the egg laying cycle, 500,000 hens were housed in a commercial egg layer facility. How many extra one-dozen cartons of eggs would be produced each day if the hen-housed egg production increased by 1.5% (and example might be if calculated Hen-housed egg production increased from 70 % to 71.5 %)?

a. 37,500
b. 7,500
c. 625
d. 450

C based on page C-162

Extra eggs produced/500,000 x 0.015 = 7,500 extra eggs produced
7,500/12 = ***625 extra cartons of eggs per day***

30) In a commercial egg facility, the typical feed consumption per dozen eggs is 3.0 pounds. If the diet contains 8% limestone, and limestone contains 39% calcium, how many pounds of calcium is needed to produce 15,000 eggs?

a. 1,404 pounds of calcium
b. 13 pounds of calcium
c. 300 pounds of calcium
d. 117 pounds of calcium

D based on C-146 and C-160

15,000/12 = 1,250 dozen eggs x 3 pounds feed/dozen eggs = 3,750 pounds of feed
3,750 pounds of feed x 8% (.08) = 300 pounds of limestone x 39% (.39)
*= **117 pounds of calcium***

National FFA Poultry Evaluation Career Development Event
2013 Written Examination w/ Answers & POSC Manual (6th ed.) Page Numbers

Directions: Please read each item carefully. Using a No. 2 pencil, bubble the letter on your scan sheet that corresponds with the correct answer.

1) Poultry meat production, processing, and distribution have undergone many changes in the past 50 years as a result of consumer demand for poultry products. In 1962, the National Chicken Council (NCC) estimated 83% of the chicken marketed in the United States was sold as whole birds. In 2015, the NCC estimates that only _____ of the market will be whole birds.

a. 2%
b. 11%
c. 49%
d. 40%

B C-107

2) In the following image, the area labeled with a circled X is called the _____.

a. neck
b. back
c. saddle
d. cape

D C-15

3) Temperature of scald water can vary depending on how the final product will be used. Parameters for scalding will vary depending on the systems used. Fast food restaurants commonly use birds that have been hard-scalded in which temperature range?

a. 120°F to 136°F
b. 123°F to 130°F
c. 132°F to 136°F
d. 138°F to 140°F

D C-109

4) Signs of perosis include swelling of the hock joints, slipped tendons, and severe shortening of long bones. Insufficient amounts of the trace minerals _____ and _____ produce a perosis-type condition in birds.

a. zinc; manganese
b. copper; zinc
c. niacin; choline
d. magnesium; zylene

A C-53

5) _____ were domesticated by the Aztecs in Mexico more than 2000 years ago; on their arrival in Europe, they were called _____ similar to other exotic birds entering Europe in the 16th century.

a. *Numida meleagris*; guinea fowl
b. *Gallus gallus*; jungle fowl
c. *Meleagris gallopavo*; turkeys
d. *Columbia livia*; pigeons

C C-14 & C-91

6) Poultry operations strive to reach feed efficiency goals of ____and ____ pounds of feed per pound of body weight for broiler and turkey operations, respectively.

a. 2; 2.5
b. 3; 3.5
c. 4; 4.5
d. 5; 5.5

A C-4 & C-5

7) The pectoral muscles account for _____ to ____ of a bird's total weight.

a. 10 to 15%
b. 15 to 20%
c. 20 to 25%
d. 25 to 30%

B C-16

8) Approximately 95% of _____ production and 99% of _____ production occurs under a contract system.

a. broiler breeder; table egg
b. broiler; turkey
c. table egg; broiler breeder
d. turkey; broiler

D C-4 & C-5

9) Individuals who enter a career in poultry _____ are likely to assist in and direct further development of poultry breeding programs.

a. genetics
b. nutrition
c. production
d. pharmaceuticals

A C-7

10) _____ determine(s) to what temperature air can be cooled by the evaporation of water.

a. Wet bulb temperature
b. Dry bulb temperature
c. Relative humidity
d. Thermostatic controls

A C-77

11) Expectoration of blood stained mucus on a bird's wings and breast feathers, resulting from the bird trying to clear its windpipe, may indicate presence of the disease _____.

a. infectious laryngotracheitis
b. infectious bronchitis
c. infectious coryza
d. infectious bursal disease

A C-49

12) Proper cleaning is especially critical in poultry production. _____ are effective against bacteria and partially effective against fungi and viruses as a water sanitizing agent.

a. quaternary ammonium compounds
b. cresol compounds
c. hypochlorites
d. iodophors

A C-54 & C-55

13) An anti-microbial wash or rinse is applied on the surface of eviscerated carcasses to reduce or inactivate microbial organisms, specifically, *Salmonella* cells. The incidence of *Salmonella* must be maintained at a level below_____ to pass FSIS inspection.

a. 5%
b. 10%
c. 1%
d. 15%

B C-110

14) Labeling terms are regulated by FSIS-USDA and relate to the temperature chicken meat can reach during shipping. For product to be labeled "deeply chilled," the meat must have

a. never been held below 32°F.
b. never been held below 26°F.
c. been held between 0°F and 26°F.
d. been held below 0°F for more than 24 hours.

C C-112

15) A properly designed and operated fan and pad cooling system can keep a building's temperature _____ lower than the outdoor temperature.

a. 10°F to 20°F
b. 15°F to 25°F
c. 20°F to 30°F
d. 25°F to 30°F

B C-79

16) Zoonotic diseases or infections are those that may be transmitted from _____ to _____.

a. invertebrates; vertebrates
b. some wild animals; all domesticated animals
c. mature, vaccinated adult birds; unvaccinated baby chicks
d. vertebrate animals; humans

D C-39

17) WB or "wet bulb" temperature can be measured using a _____or a _____.

a. thermometer; barometer
b. cooling pad; intake fan
c. modified air cell gauge; Haugh unit meter
d. sling psychrometer; hygrometer

D C-77

18) Birds do not have an evaporative cooling mechanism and must rely almost completely on _____ and _____ for excess heat disposal.

a. evaporation; ventilation
b. radiation; conduction
c. convection; perspiration
d. convection; radiation

D C-80

19) The method of poultry genetic selection involving the crossing of related individuals which focuses on improving uniformity among birds but may reduce performance is called _____.

a. single line
b. strain cross
c. inbred crosses
d. two-line cross

C C-92

20) Regular intake of adequate amounts of water soluble vitamins is important for growth, maintenance, and reproduction; however, large amounts of fat-soluble vitamins can be deadly to an animal. All of the following are water soluble vitamins except

a. thiamine.
b. pyridoxine.
c. nicotinic acid.
d. dextrose.

D C-97

21) Some enzymatic reactions in carbohydrate metabolism and protein synthesis require the mineral _____ to occur properly.

a. phosphorus (P)
b. potassium (K)
c. manganese (Mn)
d. selenium (Se)

B C-96

22) An inflammatory process involving mucus membranes characterized by an increased flow of mucus describes

a. a disease symptom known as caseous caruncle syndrome or CCS.
b. a disease symptom known as serous cataracts.
c. a disease symptom known as catarrhal.
d. a disease symptom known as watery viscosity condition or WVC

C D-4

23) In avian embryology, _____ are the blocks of mesoderm on both sides of the notochord that later develop into skin, muscle, and skeletal structures of the chick.

a. blastodiscs
b. somites
c. vestigial vertebrae
d. oocytes

B D-14

24) Cereal grains are primarily added to poultry feed as a source of metabolizable energy but contribute some protein. Which grain should be limited to no more than one-half of the total grain content of an animal feed, including poultry rations?

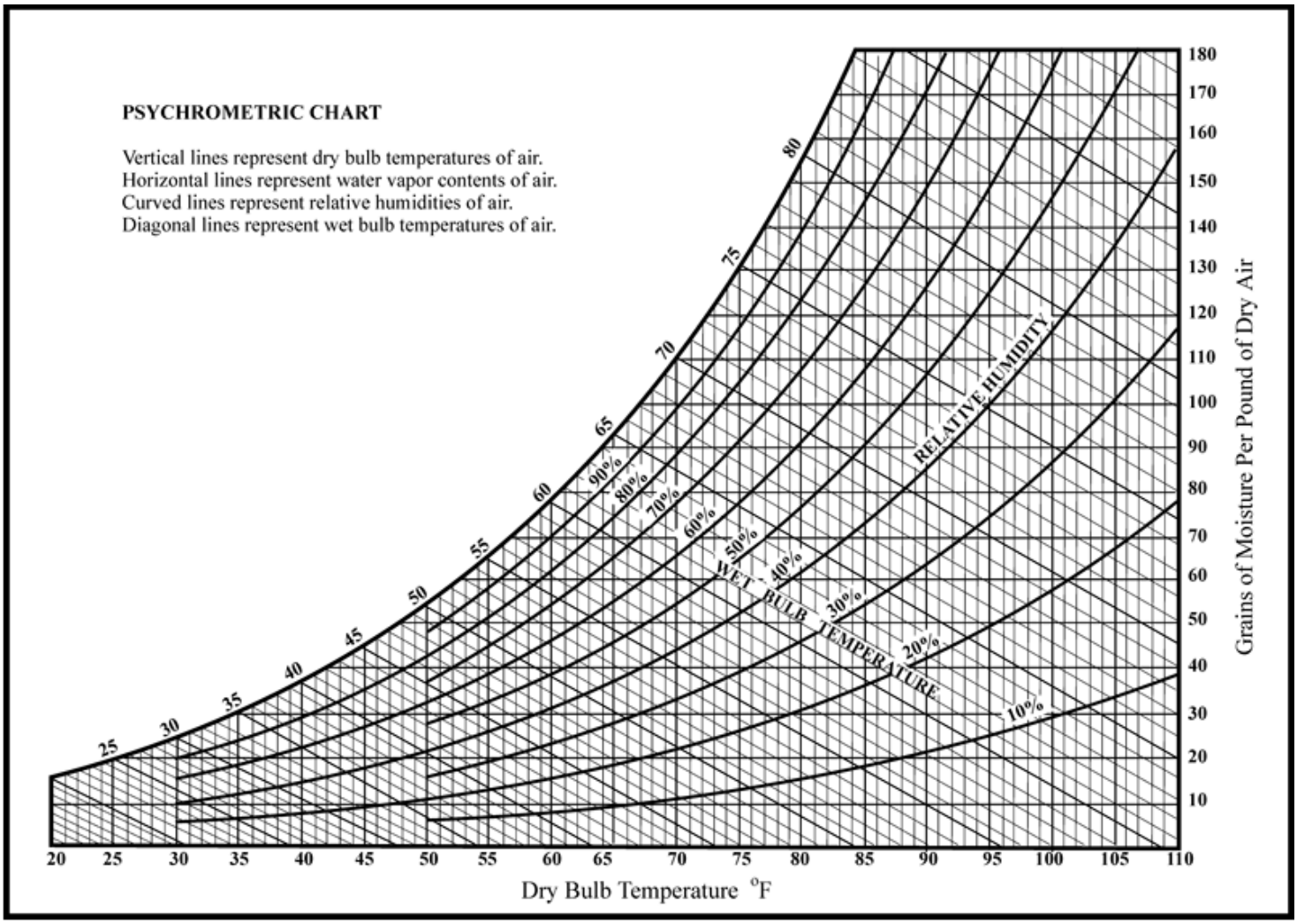
a. barley
b. corn
c. grain sorghum
d. wheat

D C-98 & C-99

25) Use the ***Psychrometric Chart below -*** The interior of a broiler house has a dry bulb temperature of 70 °F and a wet bulb temperature of 65 °F. What is the approximate relative humidity inside the house?

a. approximately 78%
b. approximately 87%
c. approximately 45%
d. approximately 40%

A C77, C-78, C-87, & C-88



26) In a broiler house, at a certain point in production, the amount of manure produced is 0.35 pounds/bird/day. The manure contains 2.0% nitrogen (N), and the total amount produced in the house is 164.5 pounds of N/day. How many birds does the broiler house contain?

a. 2,879
b. 25,300
c. 23,500
d. approx. 115

C Based on information found on C-70 & C-71

164.5 pounds/2.0% = 8225 pounds of manure per day x 1 bird/0.35 pounds = 23,500 birds

27) A broiler house contains 29,500 birds weighing an average of 4.5 pounds/bird. The hot weather ventilation recommendation for birds of this size is 4.6 cubic feet of air/minute. The house contains ventilation fans capable of moving 15,000 cubic feet of air/minute each. To meet the hot weather ventilation recommendation, what is the minimum number of (whole) fans required for this broiler house?

a. 10
b. 4
c. 20
d. 58

A Based on information found on C-82 through C-87

29,500 birds x 4.6 cfm/bird x 1 fan/15,000 cfm = 9.0466 fans = 10 fans

28) A recommended rate of water flow for an evaporative pad cooling system is one-half gallon per minute per linear foot of cooling pad. A producer has a 350-foot long building that is 36 feet wide with a 3-foot tall evaporative pad that runs along one-fourth of the length of the building. How many gallons of water per minute would be recommended for this pad system to enable proper wetting and optimal evaporative performance?

a. 175.00 gallons of water
b. 58.33 gallons of water
c. 87.50 gallons of water
d. 43.75 gallons of water

D Based on information found on C-84

350 feet (length of building)/4 (evaporative pad is 1/4 of the building's length) = 87.5 feet of evaporative pad X 0.5 = 43.75 gallons of water required/minute

29) A flock of 24,500 broilers has an average weight of 6.25 pounds per bird. The dressing percentage (without giblets, or WOG) is expected to be 65%, and the breast yield is expected to be 33% of the carcass WOG weight. If breast meat is valued at $1.57 per pound, what is the expected total value of breast meat produced by this flock (to the nearest dollar)?

a. $52,553
b. $47,353
c. $162,236
d. $51,567

D Based on information found on C-114 & C-115

24,500 birds x 6.25 lb/bird x 65% WOG yield x 33% breast yield = 32,845.31 lb breast meat
32,845.31 lb x $1.57/lb = $51,567 is the expected total value of breast meat produced by this flock

30) A broiler company expects to produce 1,600,000 birds per week, and typically loses 1% of all birds due to leg problems. The average live weight of birds at the time of processing is 5.75 pounds/bird, and the dressing percentage (without giblets, or WOG) is expected to be 63%. If the carcass value (WOG) is $0.79/pound, calculate how much of a monetary loss would be incurred each year (to the nearest dollar) by loss of the birds with leg problems compared to the expected value if the birds were produced as healthy broilers.

a. $23,809,968
b. $2,380,997
c. $45,789
d. $238,100

B Based on information found on C-53 & C-115

1,600,000 birds x 1% = 16,000 birds lost/week
16,000 birds x 5.75 pounds/bird x 63% WOG yield x $0.79/pound = $45,788.40 lost/week
$45,788.40/week x 52 weeks/year = $2,380,997 lost per year due to leg problems

2014 National FFA Poultry Evaluation Career Development Event
Written Examination

Directions: Please read each item carefully. Using a No. 2 pencil, bubble the letter on your scan sheet that corresponds with the correct answer.

1) The covert feathers are found on which parts of the chicken?
   a. wing and tail
   b. neck and wing
   c. neck and thigh
   d. None of the above answers is correct.

   a C-15
2) The term for passing or laying of an egg is
   a. ovulation.
   b. expulsion.
   c. oviposition.
   d. cycling.

   c C-24
3) Which of the following is a bi-lobed gland at the base of the brain and called the "master gland" because it releases hormones which regulate activities of other endocrine glands?
   a. oxytocin
   b. pituitary
   c. ovary
   d. adrenals

   b C-26
4) The egg yolk contents are retained by the _____ membrane and the blastodisc is attached to it.
   a. inner
   b. vitaline
   c. chalazae
   d. vitelline

   d C-27
5) What percentage of hatch of chicks would be expected for eggs in which the head of the embryo develops oriented toward the pointed (small) end of the egg?
   a. 25%
   b. less than 50%
   c. 75%
   d. 0%

   b C-33

6) Which two days of incubation in chickens are expected to have the highest mortality?
   a. 4 and 18
   b. 1 and 21
   c. 4 and 24
   d. None of the above answers is correct.

   a C-35

7) Which of the following nutrient deficiencies of the hen may affect embryonic development but not necessarily prevent egg formation from occurring?
   a. calcium
   b. vitamins and trace minerals
   c. phosphorus
   d. calcium and phosphorus

   b C-35

8) Which pathogen can be described as ubiquitous (nearly everywhere) in the chicken population?
   a. coccidiosis
   b. croupe
   c. fomites
   d. Marek's disease virus

   d C-39

9) Transmission of infectious agents in poultry by contact, such as touching, pecking, or mating or from droplet spread, is considered a form of
   a. vehicle-borne transmission.
   b. vector-borne transmission.
   c. airborne transmission.
   d. direct transmission.

   d C-41

10) A major component of biosecurity is
   a. isolation.
   b. traffic control.
   c. sanitation.
   d. All of the above answers are components of biosecurity.

   d C-43

11) This disease is caused by a herpes virus and characterized by rapid spread, sneezing, gasping, and possible expectoration of blood-stained mucus.
   a. Newcastle disease
   b. Marek's disease
   c. infectious bronchitis
   d. laryngotracheitis

   d C-49

12) A toxic gas heavier than air which may be emitted during pump-out or agitation of manure storage pits is
    a. carbon monoxide.
    b. hydrogen peroxide.
    c. ammonia.
    d. hydrogen sulfide.

    d C-64

13) In a two-stage lagoon system, the first stage or cell is usually deep and _____, and the second stage or cell is shallower and _____.
    a. anaerobic; aerobic
    b. aerobic; anaerobic
    c. bacterial; sterile
    d. antioxidant; putrid or pungent

    a C-66

14) The optimum storage temperature for broiler hatching eggs stored for only 3 days before setting versus eggs stored for 18 days would be _____.
    a. 63 to 66°F / 60 to 62° F
    b. 60 to 62°F / 60 to 62°F (same)
    c. 60 to 62°F / 63 to 66°F
    d. None of the above answers is correct.

    a C-121

15) Three factors known to influence the total incubation time required for a setting of eggs to hatch are
    a. incubation temperature, age of egg, and size of egg.
    b. egg storage temperature, season of year, and size of egg.
    c. incubation temperature, breed of chicken, and fertility rate.
    d. None of the above answers is correct.

    a C-122

16) Chicks are hatching with some difficulty and many are sticky and some have shell fragments stuck to their wings and back. Which condition most likely contributed to this problem?
    a. odd shaped eggs
    b. genetic defects
    c. washing eggs in hot water
    d. incubator temperature too high (day 20 to day 21)

    d C-131

17) The recommended light intensity at bird height for market broilers is
    a. 10 to 20 lux.
    b. 10 to 20 photons.
    c. 20 to 40 foot-candles.
    d. 10 to 20 foot-candles.

    a C-140

18) The eviscerated carcass yield of market broilers
    a. decreases 1% for each 1% shrinkage in live weight during shipment to processing.
    b. decreases 0.66% for each 1% shrinkage in live weight during shipment to processing.
    c. increases 1% for each 1% shrinkage in live weight during shipment to processing.
    d. is not affected by shrinkage during shipment to processing.

    b C-141

19) How often are commercial female turkey breeder hens artificially inseminated?
    a. weekly
    b. biweekly
    c. twice per week
    d. The hens are not artificially inseminated, rather natural mating is used.

    a C-148

20) On average, feed represents what percentage of the cost of market turkey production?
    a. 50%
    b. 60%
    c. 70%
    d. 80%

    c C-158

21) Which of the following statements is true in regard to growing commercial varieties of egg-type pullets?
    a. Uneven body weights early in the rearing period is easily corrected by management.
    b. Common causes of lack of uniformity in pullet body weights are crowding, disease, poor beak trimming, and inadequate nutrient intake.
    c. The flock should be managed to avoid excessive body weight gain during the 12 to 18 week age of rearing.
    d. Answers "b" and "c" are true.

    d C-166 & C-167

22) Which of the following is not a good management practice regarding eggs produced from free-range systems?
    a. Making provisions at the entrance of the poultry house to clean the feet of the hens.
    b. Preventing or limiting the number of broken eggs in the nests.
    c. Managing to prevent or limit hens from sleeping in the nests.
    d. Encouraging floor laying of eggs because this will decrease the number of dirty eggs collected.

    d C-181

23) The Mediterranean Class of Large Fowl includes the
    a. Leghorn, Minorca, and Ancona breeds.
    b. Houdan and Hamburg breeds.
    c. Orpington, Sussex, and Cornish breeds.
    d. Rhode Island Red, Plymouth Rock, and New Hampshire breeds.

    a C-188

24) The most common game bird raised in the United States is the
    a. Coturnix Quail.
    b. Bobwhite Quail.
    c. Chukar Partridge.
    d. Ringneck Pheasant.

    b C-199

25) A cell that can ingest and destroy foreign cells such as bacteria is a
    a. bacterphage.
    b. microphage.
    c. macrophage.
    d. None of the above answers is correct.

    c D-10

26) On a commercial turkey farm, toms are grown to an average final weight of 45 pounds. If the space requirement of the finishing barn for these turkeys is 1 square feet per 10 pound of turkey, which of the following barn sizes is closest to the total square feet required to appropriately house 4,400 turkeys?
    a. a 30 feet wide by 400 feet long finishing barn
    b. a 60 feet wide by 400 feet long finishing barn
    c. a 50 feet wide by 400 feet long finishing barn
    d. a 30 feet wide by 500 feet long finishing barn

    c based on page C-153

    4,400 tom turkeys x 45 pounds = 198,000 pounds
    198,000 lbs/ 10 lbs per square feet = 19,800 square feet
    ***50 feet x 400 feet** = 20,000 square feet*

27) A broiler farm contains houses measuring 50 feet wide by 500 feet long. In each house, bird density is 1.042 square feet per bird. If the total live weight produced per house is 186,000 pounds, what is the approximate average weight per bird?
    a. 7.75 pounds
    b. 6.25 pounds
    c. 5.28 pounds
    d. 4.09 pounds

    a based on page C-132

    *50 * 500 = 25,000 square feet * 1 bird / 1.042 square feet = 23,992 birds in the house*
    186,000 pounds / 23,992 birds = ***7.753 pounds per bird***

28) In a turkey facility, the targeted minimum ventilation per pound of turkey is 1.5 CFM. Assume in a small facility, 1,150 hen turkeys weighing 12 pound each are placed in a 35 feet wide by 65 feet long barn. If only one fan is used, which of the following fans would be capable of providing the required rate of air movement?

a. 1 hp, 48-inch variable speed box fan rated at 21,000 CFM High, 4,050 CFM Low
b. 1/4 hp, 20-inch direct drive single speed fan rated at 3,200 CFM
c. 1/2 hp, 36-inch variable speed box fan rated at 11,230 CFM High, 4,050 CFM Low
d. None of the above fans would provide sufficient capacity

a based on page C-153

1,150 x 12 = 13,800 pounds of turkey and 13,800 x 1.5 = ***20,700 CFM***
(only the 1-hp fan has the required rated capacity)

29) At the beginning of the egg laying cycle, 152,000 hens were housed in a commercial egg layer facility. At 52-weeks of lay, 142,400 hens remained and were producing 290 cases of 30 dozen eggs per day. What were the hen-housed egg production rate and the hen-day rate of lay of these hens at that point in their laying cycle?

a. 73.31% Hen-housed and 68.68% Hen-day production
b. 68.68% Hen-housed and 73.31% Hen-day production
c. 73.31% Hen-housed and 82.33% Hen-day production
d. None of the above answers is correct.

b based on page C-177

30 dozen x 12 x 290 = 104,400 eggs
Hen-day = 104,400 / 142,400 x 100 = 73.31%
Hen-housed = 104,400 / 152,000 x 100 = 68.68%

30) In a commercial egg facility, the typical feed consumption per one dozen eggs is 3.01 pounds. If a flock's diet contains 68% corn, and one bushel of corn weighs 56 pounds, how many bushels would be represented in the daily feed consumed by a flock of 125,000 laying hens producing eggs on a 75% hen-day basis?

a. at least 400 bushels allowing for wastage
b. 286 bushels
c. 782 bushels
d. 160 bushels

b based on C-3, 161, 175 & 177

125,000 x 0.75 = 93,750 eggs / 12 = 7,812.5 dozen eggs
7,812.5 dozen x 3.01 lbs. = 23,516 lbs. of feed
23,516 lbs. of feed x .68 = 15,991 lbs. of corn
15,991 lbs. of corn / 56 lbs. per bushel = ***285.55 bushels of corn***

2015 National FFA Poultry Evaluation Career Development Event
Written Examination

Directions: Please read each item carefully. Using a **No. 2 pencil**, bubble the letter on your scan sheet that corresponds with the most correct answer.

1. A 21-week old market tom turkey should be expected to weigh
   a. less than 20 pounds.
   b. 20 to 30 pounds.
   c. 30 to 40 pounds.
   d. more than 40 pounds.
   d) C-5

2. The expected body temperature range of healthy poultry is
   a. 98.6 to 99.0° C
   b. 99.0 to 102° F
   c. 98.6° F
   d. 105.0° F to 107.0° F
   d) C-13

3. *Anser anser* is the species name for
   a. chickens (domestic).
   b. pheasants (ring-necked).
   c. geese (domestic).
   d. ducks (mallards).
   c) C-14

4. Which muscle draws the head of the chicken left or right and moves the scapula?
   a. flexor perforan
   b. obliquus
   c. savorius
   d. trapezius
   d) C-17

5. Sternum, breastbone, and keel are
   a. names for the bone in the chicken that provides attachment for the pectoralis major and pectoralis minor muscles.
   b. names for the bone that supports the breast muscles.
   c. different names for the bone which, if deformed (crooked), may reduce market value of the carcass.
   d. Answers a., b., and c. are correct.
   d) C-18 & C-19

6. What is a common name for the hypotarsal?
   a. neck
   b. phalanges
   c. knee cap
   d. hock joint
   d) C-19

7. Which part of the ovum (yolk) is penetrated by an avian sperm during fertilization?
   a. blastoderm
   b. blastodisc
   c. chalazae
   d. shell membrane
   b) C-27 & C-28

8. Which part of an incubating egg contains enzymes that digest yolk material so it can be absorbed by the developing embryo?
   a. area opaca
   b. yolk sac
   c. allantois
   d. chalazae
   b) C-28 & C-29

9. Which is the proper order of development of a chick embryo from earliest to latest?
   a. gastrulation, primitive streak, primitive groove
   b. gastrulation, primitive groove, primitive streak
   c. primitive groove, primitive streak, gastrulation
   d. All embryonic development occurs simultaneously.
   a) C-30

10. Direct, indirect (both vector-borne and vehicle-borne), and airborne refer to
   a. transmission mechanisms of infectious agents.
   b. vaccine applications.
   c. transmission of disease immunity.
   d. types of poultry ventilation systems.
   a) C-41 & C-42

11. This disease is caused by a herpes virus and may be observed in pullets from 2 to 16 weeks of age. To prevent it, which vaccination is usually given to pullet chicks grown for egg production?
   a. Marek's
   b. Newcastle
   c. Infectious bronchitis
   d. Fowl Pox
   a) C-47

12. This disease is caused by protozoa of the genus *Eimeria.* Nine species affect chickens and three species are pathogenic to turkeys. Symptoms include enteritis, decreased production performance, and mortality.
a. Avian influenza
b. Marek's
c. Infectious bursal disease
d. Coccidiosis
d) C-52

13. Leg disorders in broilers can be caused by nutritional, genetic, or infectious factors. Conditions that may be nutrition-related include
a. rickets.
b. tibial dyschondraplasia.
c. perosis.
d. Answers a., b., and c. are leg disorders in broilers that may be nutrition-related.
d) C-53

14. When poultry manure is converted into a biogas, it contains almost 30%
a. methane (CH_4).
b. carbon dioxide (CO_2).
c. water vapor.
d. hydrogen sulfide (H_2S).
b) C-69

15. A large amount of moisture is created within a poultry building. Most of it must be removed by
a. cooling of incoming air.
b. methods of evaporative cooling.
c. exchange of air with the outside environment.
d. mechanically replacing the litter.
c) C-74

16. Which statement is true?
a. In all types of poultry housing and conditions, reducing the ventilation rate will not increase moisture removal.
b. Too low a ventilation rate will not result in damp, muggy conditions for the birds.
c. During cold weather, the outdoor air entering a facility must be cooled to increase its capacity to hold moisture.
d. All of the above answers are false regarding the ventilation of poultry houses and the removal of moisture.
d) C-76

17. Source of the genetic trait providing the modern broiler with a large, broad breast is the _____ breed of chicken.
a. Wyandotte
b. Rock
c. Cochin
d. Cornish
d) C-91

18. Which class of nutrient contains carbon, hydrogen, oxygen, nitrogen, and in some cases sulfur?
a. proteins
b. carbohydrates
c. fats and oils
d. electrolytes
a) C-94 & C-95

19. The fat soluble vitamins include
a. A, B_1, B_2, and B_{12}.
b. A, D, B_1, and B_2.
c. A, D, E, and folic acid.
d. None of the above answers is entirely correct.
d) C-97

20. Which of the following elements are considered *macro minerals* in regard to poultry nutrition?
a. Ca
b. P
c. Mg
d. Calcium, phosphorus, and magnesium are classified as *macro minerals.*
d) C-96

21. Which hormones and/or steroid implants or feed additives are used in poultry production in the United States?
a. DES (diestibestrol)
b. zeranol
c. combinations involving six types of anabolic steroids
d. None of the above substances is approved by the FDA for use in poultry production.
d) C-103

22. Which of the federal agencies listed, as identified by their respective acronyms, has regulatory oversight of poultry processing?
a. NIH
b. NASA
c. FSIS
d. NOAH
c) C-107

23. Proper timing of feed withdrawal for pre-slaughter birds has what effect during processing?
a. limits fecal matter in the intestine and aids in reducing fecal contamination
b. eliminates weak birds prior to slaughter
c. is critical in cost savings due to less shrinkage of poultry viscera
d. proper timing of feed withdrawal for pre-slaughter birds is only important in the processing of market turkeys
a) C-108

24. The USDA requires that carcasses must be chilled to below which temperature within 4 to 8 hours depending on carcass weight?
a. 32°F
b. 40°F
c. 45°F
d. 27°F
b) C-110

25. The dressed carcass without neck and WOG comprises what percentage of a broiler's live weight?
a. 57% to 61%
b. 63% to 65%
c. 67% to 71%
d. 75%
b) C-115

26. Calculate the number of pounds of ground corn (9.0% crude protein) and concentrate (41.0% crude protein) required to formulate 100 pounds of an 18.0% crude protein feed. Assume the concentrate will contain all additional nutrients, vitamins, and other additives necessary to produce a complete feed.

a. 23 pounds of corn and 9 pounds of concentrate
b. 41 pounds of corn and 23 pounds of concentrate
c. 72 pounds of corn and 28 pounds of concentrate
d. 28 pounds of corn and 72 pounds of concentrate

Answer c)

Using Pearson's Square

CORN	9		23
DESIRED		18	
CONCENTRATE	41		9
			32

Corn = 23/32 (72.0% or 72/100) and Concentrate = 9/32 (28.0% or 28/100)

Based on related content found on C-105 & C-106

27. Egg layer manure containing 78.0% moisture was analyzed to contain 4.4% calcium (Ca) and 1.5% nitrogen (N) on a dry matter (DM) basis,. How many pounds of each mineral would be found in one ton of the fresh (wet) egg layer manure?

a. 19.36 pounds Ca and 6.60 pounds N
b. 68.64 pounds Ca and 23.47 pounds N
c. 88.87 pounds Ca and 30.12 pounds N
d. None of the above answers is correct.

Answer a)

1 ton or 2000 lbs x (1.00 - .78) = 440 lbs of DM in 1 ton of fresh (wet) manure

440 lbs DM * 4.4% Ca = 19.36 lbs of Ca and 440 lbs DM * 1.5% N = 6.60 lbs of N

Based on related content found on C-70 & C-71

28. Broiler litter was analyzed and found to contain 38.0% moisture and it had the following analysis on a dry matter basis (DMB): Total nitrogen (N), 4.48%; total phosphorus (P), 2.17%; and total potassium (K), 3.61%. How many **pounds** of total N, P, and K are in one ton of the fresh (or as-is or non-dried) broiler litter?

a) N = 55.6, P = 26.9, K = 44.8
b) N = 89, P = 43, K = 72
c) N = 4.48, P = 2.17, K = 3.61
d) None of the above answers is correct.

Answer a)

2000 lbs litter * (1 - .38) = 1240 lbs DM
1240 lbs DM * 4.48 % N DMB = 55.6 lbs N
1240 lbs DM * 2.17 % P DMB = 26.9 lbs P
1240 lbs DM * 3.61 % N DMB = 44.8 lbs K

Based on related content found on C-70 & C-71

29) A broiler company expects to produce 850,000 birds per week, and typically loses 1% of all birds due to leg problems. The average live weight of birds at the time of processing is 5.75 pounds/bird, and the expected dressing percentage (WOG) is 63.0%. If the carcass value (WOG) is $0.78/pound, calculate approximately how much money would be lost annually due the birds with leg problems.

a) ~$1,601,145
b) ~$240,172
c) ~$48,875
d) ~$1,248,884

Answer d)

850,000 birds x 1% = 8500 birds lost/week
8500 birds x 5.75 pounds/bird x 63.0% WOG yield x $0.78/pound = ~$24,017 lost/week
~$24,017/week x 52 weeks/year = ~$1,248,884 lost annually

Based on related content found on C-53 & C-115

30) A poultry house is equipped for tunnel ventilation with 8 outward-facing fans at one end of the house and a pad system at the other end. Each fan is capable of moving 23,500 cubic feet of air/minute. The pad system is evenly divided with half on one sidewall, and the other half on the opposite sidewall. For hot weather cooling, at least 1 square foot of pad space is recommended for every 250 cubic feet/minute of air movement. If the pads are 4.5 feet high and all fans are operating, the total length of pad needed, including both sidewalls, is _____ feet.

a. 167
b. 83.5
c. 752
d. 334

Answer a)

Total air movement = 8 fans x 23,500 cfm/fan = 188,000 cfm
Square feet of pad needed = 188,000 cfm x 1 square foot/250 cfm = 752 square feet
Length of pad = 752 square feet/4.5 feet high = 167 feet

Based on related content found on C-84 & C-85