National FFA 2017 – Poultry CDE – Team Activity

A further processed poultry products plant is producing a newly commercialized breast meat strip. The product launch is going well, however the QA department is receiving some complaints for inconsistency in product sizing. The plant has been conducting hourly audits of the product evaluating the following product characteristics: Piece weight, piece length, shape/size defects, coating voids, color consistency, and breading pickup. Hourly breading pickup is monitored by weighing raw strips after marination, then after breading. The calculation for breading pickup is as follows:

$$\frac{\text{(Breaded product weight – Raw product weight)}}{\text{Breaded product weight}} \times 100 = \text{Breading pickup}$$

The specified breading pickup for this product should be 25% breading pickup (23 – 27% acceptable range). Ten pieces of this product are evaluated every 30 minutes to determine if the product is acceptable quality (Specification limits included in table below). There is an acceptable % compliance to the defined weight and length parameters. For weight, the 10 pieces must be 95% compliant to the specified range, and for length 10 pieces must be 85% compliant to the specified range.

$$\text{Percent compliance} = \frac{\text{\# of pieces within specified range}}{\text{\# of pieces in sample}} \times 100$$

Specification for a 10 piece sample of this item are as follows:

Product Attribute	Target (center of spec)	Acceptable Range	% Compliance
Piece weight	52 g	32 – 72 g	95%
Piece length[2]	4.0 inch	3.0 inch – 5.0 inch	85%
Acceptable Quality Limits[1]	Accept	Reject	
Color defect	1	2	
Te Shape/Size defect	1	2	
Coating void	2	3	
Combined color/shape/size defects	2	3	
Foreign Material	0	1	
Marriage	0	1	

[1]Acceptable quality limits example – for this product 1 piece in a sample that is too dark would be acceptable quality, 2 pieces that are too dark would be rejectable quality.
[2] There are 25.4 mm in 1 inch

Use this scenario and the samples provided in the Team Activity portion of the contest as indicated in the following questions.

1.) At this production facility, the average live bird weight is 6.90 lbs. These flocks are usually approximately 32 d at slaughter and yield 24% breast meat of WOG weight. During one production day breast yield topped at 26% of WOG weight. On average, how many pounds per day are gained by this flock in this complex?

a. 0.50 lbs per day
b. 0.46 lbs per day
c. 0.33 lbs per day
d. 0.22 lbs per day
e. 0.20 lbs per day

2.) Weigh the sample of breast strips. Using the data collected and the scenario above would these weights pass a specification check?
Hint: Discuss this in your group presentation.
Piece weights (g): 45, 41, 39, 43, 36, 47, 45, 40, 48, 25
9 / 10 *100 = 90% compliance to specification

a.) Yes, the sample would pass inspection.
b.) No, the sample would not pass inspection.

3.) For an "all white meat" product which muscles of the chicken can be utilized?

a.) Pectoralis major
b.) Gastrocnemius
c.) Pectoralis minor
d.) Iliotibialis
e.) Both a and c

4.) Define USDA.

a.) United States Department of Animal production
b.) United States Inspection Service
c.) Food Safety Inspection Service
d.) United States Division of Agriculture
e.) United States Department of Agriculture

5.) Which of the below would be the most complete appropriate process flow for fully cooked whole muscle breaded products?

a.) Grinding/chopping – marination/blending – predust/batter/bread - cook
b.) Marination/blending – predust/batter/bread - cook
c.) Portioning – marination - predust/batter/bread – cook – glaze (if applicable)
d.) Marination - predust/batter/bread – cook – glaze (if applicable)
e.) None of the above

6.) The USDA considers products fully cooked at what minimum internal temperature?

a.) 145°F
b.) 150°F
c.) 155°F
d.) 160°F
e.) 155°F

7.) Measure, using the calipers, the sample of breast strips. Using the data collected and the scenario included above would these data pass a specification check at 85% compliance?
Hint: Discuss this in your group presentation.

a.) Yes, the sample would pass inspection
b.) No, the sample would not pass inspection

8.) What is the mean strip length in this sample? Choose the most appropriate answer.
Strip lengths (mm) – 78, 91, 98, 95, 114, 116, 98, 101, 108, 111

a.) 95 mm
b.) 101 mm
c.) 111 mm
d.) 117 mm
e.) Not enough information provided

9.) A sample of 5 breast strips were used to calculate the breading pickup for monitoring the labeling compliance and product quality. Please see data below, calculate the breading pickup for this hour of production. *Hint: Discuss this in your group presentation.*

Raw Piece Weight (g)	Breaded Piece Weight (g)
32	43
31	48
36	52
35	48
37	49

240-171/240 *100 = 28.75% pickup

Choose the most appropriate answer:

a.) 25.25%
b. 26%
c.) 27.75%
d.) 28%
e.) 28.75%

10.) The label standard for this product based on breading pickup would be _____.

a.) Fritter
b.) Heavily breaded
c.) Breaded
d.) Lightly breaded
e.) Unbreaded

11.) Based on the sample, and the product specification standards included in the scenario above for color defect would the sample be acceptable?

Hint: Discuss this in your group presentation.

a.) Yes, the sample would be acceptable.
b.) No, the sample would not be acceptable.

12.) Evaluate the sample of product, which of the following statements would be true about this sample:

a.) There are no quality defects
b.) There is a color defect, shape/size defect
c.) There is a foreign material defect
d.) There are shape/size and coating void defects

e.) There are color and foreign material defects

13.) This question is pertaining to the same sample 10 evaluated. Based on the acceptable quality limits provided in the table above should this product be accepted or rejected?

Hint: Discuss this in your group presentation.

a.) The product is acceptable.

b.) The product should be rejected. **Cumulative defects

14.) On average breast yield during one day of production was 24% of live weight. On this day the average live weight slaughtered was 6.90 lbs. From each bird, 75% of the breast fillet can be utilized in the raw material for the breast strips. On average, how many pounds of breast strips are produced per bird?

6.90 * 24% breast yield = 1.656 lbs breast meat per bird

1.656 lbs breast meat per bird * 75% yield of strips per fillet = 1.242 lbs of breast strips per bird

a.) 1.00 lbs of breast strips per bird

b.) 1.24 lbs of breast strips per bird

c.) 2.55 lbs of breast strips per bird

d.) 5.18 lbs of breast strips per bird

e.) Not enough information provided

15.) Weekly orders for this further processed marinated, breaded breast strip are 100,000 lbs of final product per week. Increased demand for other products produced at this facility has limited raw material supply for these breast strips to 50,000 lbs of raw, unmarinated breast strips per week. During processing, marination (prior to breading) results in 10% being added to the raw breast meat weight used for this product. Will the 50,000 lbs of raw material available be sufficient to supply the 100,000 lbs of processed product?

50,000 lbs of raw material * 10% marination = 5,000 lbs of marinate added

Weight of marinated raw product = 50,000 lbs product + 5,000 lbs marinate = 55,000 lbs

25% = (x – 55,000)/x x 100

0.25x = x – 55,000

55,000 = 0.75x

X = 73,333 lbs of breaded strips produced

a.) Yes, there will be 110,750 lbs of strips produced

b.) Yes, there will be 105,000 lbs of strips produced

c.) No, there will only be 90,507 lbs of strips produced

d.) No, there will only be 73,333 lbs of strips produced

e.) No, there will only be 55,450 lbs of strips produced

16.) In the commercial poultry industry lighter weight chickens are used for _____and _____operations.

a.) Further processed and breaded products

b.) Fast Food and breaded products

c.) Fast food and whole bird

d.) Retail and deli
e.) Casual dining restaurants and retail

17.) An average poultry complex will slaughter 1,000,000 birds per week. Yield of parts from these birds are included in the table below (yields are expressed as a percentage of live weight). Approximately 65% of the whole legs produced at this facility are exported, primarily to Russia and China. How many lbs of whole leg are available for export each week?

Average Live Weight	7.9 lbs
Average Breast Fillet Yield	25%
Average Tenderloin Yield	10%
Average Wing Yield	15%
Average Whole Leg Yield	32%

1,000,000 x 7.9 lbs = 7,900,000 lbs live weight
7,900,000 x 32% whole legs = 2,528,000 lbs whole legs
2,528,000 lbs whole legs x 65% legs exported = 1,643,200 lbs whole legs exported

a.) 2,528,000 lbs/week
b.) 1,643,200 lbs/week
c.) 1,600,900 lbs/week
d.) 1,200,000 lbs/week
e.) None of the above

18.) True or False – Hormones are never used in commercial poultry production.
a.) True
b.) False

19.) Grading of poultry products help define the product to the consumer. Grading is conducted at point of cut up or packaging by _____.
a.) Independent contractors
b.) USDA Animal Management Service
c.) USDA Agriculture Marketing Service
d.) USDA Food Safety Inspection Service
e.) None of the above

20.) The commercial turkey industry used _____ birds that are ready for market in 14 weeks (hens) and 20 weeks (toms)
a.) Broad breasted white
b.) White Plymouth rock x Broad breasted broiler
c.) Broad breasted bronze
d.) Cornish cross
e.) White breasted cornish