

1. Hatcheries can only successfully hatch chicks if the eggs arrive fertile. Ensuring fertile eggs is one of the most important roles of the breeder farm, and when a fertile egg arrives at the hatchery embryonic development has already begun. Which of the following is the BEST term for a fertile egg? (Page C-27)
- a. **Blastoderm**
 - b. Blastodisc
 - c. Vitelline Embryo
 - d. Fertile egg
 - e. None of the above
2. Based on the hatchability data provided in the video, how many eggs should be placed in the incubator to ensure the proper number of chicks to meet the order? (Page C-120)
- a. 21,400
 - b. **29,205**
 - c. 28,659
 - d. 30,500
 - e. 32,265
- 25,000
_____ X 100 = 85.6% average hatchability
X
3. Based on the scenario provided, what will be the implication of the egg storage times prior to beginning incubation? (Page C-122)
- a. Incubation time should be extended by 1 hour
 - b. Incubation time should be extended by 3 hours
 - c. Incubation time should be extended by 5 hours
 - d. **There will be no effect of storage on incubation time**
 - e. None of the above

4. Provided below is an abbreviated data set collected at the hatchery prior to beginning incubation. To ensure that all of the eggs incubated hatch should incubation time be adjusted to compensate for egg size? If so, how? (Page C-122)

Breeder Flock Age: 40 weeks of age 50 weeks of age	
Egg weight (oz.)	
2.1	2.6
2.5	2.4
1.9	2.1
1.8	1.9
2.0	2.3
2.1	2.3
2.3	2.5

Average egg weight for 40 wk.
breeder flock – 2.1 oz. no adjustment
needed for egg weight.

Average egg weight for 60 wk.
breeder flock – 2.3 oz., increase
incubation time by 1 hour (30 minutes
for every 0.1 oz. over 2.1 ounces

- a. Yes, incubation time should be extended by 1 hour
 - b. Yes, incubation time should be extended by 3 hours
 - c. Yes, incubation time should be extended by 5 hours
 - d. No, there will be no effect of storage on incubation time
 - e. None of the above
5. Which of the following **is not** a goal of pre-warming the eggs prior to incubation? (Page C-122)
- a. Avoid temperature shock to the embryo
 - b. Prevent condensation build-up on egg shell surface
 - c. Jump start embryo cell division prior to incubation
 - d. Both a and b
 - e. All of the above
6. In the scenario, Doug made adjustments to the hatching parameters to prevent the chicks from hatching too early. Which of the following would be the most appropriate answer to diagnose the problem of hatching too early based on Doug's corrective action? (Page C-131)
- a. Incubation temperature too low
 - b. Incubation temperature too high
 - c. Poor egg storage
 - d. Improper turning in the setter
 - e. Large eggs

7. Which of the following could be a potential cause of the greater number of malformations observed in the previous two hatches? (Page C-131)
- a. Hereditary or virus infection
 - b. High temperatures during incubation
 - c. Nutritional imbalances of the breeder flock
 - d. Egg contamination
 - e. Excessive handling of the eggs prior to incubation
8. Rotating the eggs in the setter (incubator) is a critical, which of the following **is not** a reason to rotate eggs in the incubator? (Page C-124 and 125)
- a. Prevent chicks from sticking to the shell
 - b. Ensure even an adequate feather coverage
 - c. Aid in the development of embryonic membranes
 - d. Promote air flow and appropriate cooking of the eggs
 - e. None of the above
9. Which of the following is the most correct temperature range for the setter in this scenario to be operated in during the first 18 d of incubation? (Page C-124)
- a. 90.8-92.7°F
 - b. 95.5-96.5°F
 - c. 98.8-99.7°F
 - d. 99.5-101.5°F
 - e. None of the above

10. For best hatchability it is critical to manage the relative humidity of the incubator. Below is an abbreviated data set of the egg weights collected at the hatchery at transfer. What is the average moisture loss for these eggs? If the acceptable range is +/- 0.5% of the target was the relative humidity managed well during setting for these eggs.

Breeder Flock Age:	40 weeks of age		50 weeks of age	
	0 d Egg Wt. (oz.)	18 d Egg Wt. (oz.)	0 d Egg Wt. (oz.)	18 d Egg Weight (oz.)
	2.1	1.85	2.6	2.26
	2.5	2.18	2.4	2.13
	1.9	1.67	2.1	1.85
	1.8	1.58	1.9	1.65
	2.0	1.76	2.3	2.05
	2.1	1.87	2.3	2.02
	2.3	2.00	2.5	2.20

- a. 11.70%, No it is not within the acceptable range
 - b. 11.90%, Yes it is within the acceptable range
 - c. 12.40%, No it is not within the acceptable range
 - d. 12.30%, Yes it is within the acceptable range
 - e. 11.58%, No it is not within the acceptable range
11. Which of the following **is not** a reason that baskets are used in the hatcher? (Page C-125)
- a. Placing eggs on their sides allows for free movement of the chicks during hatch
 - b. Aids in rapid transfer to prevent eggs from cooling
 - c. Confines the large quantities of fluff generated during hatch
 - d. Chicks have a down covering therefore rotation is not necessary
 - e. None of the above
12. Which of the following is the most correct operating temperature of the hatcher? (Page C-125)
- a. 80.8°F
 - b. 98.8°F
 - c. 99.3°F
 - d. 99.7°F
 - e. 101.5°F

13. After the eggs have hatched what is an appropriate chemical to use in the hatcher? (Page C-130)

- a. Chemical sanitation of the hatcher is not necessary
- b. bleach solution (1:10)
- c. Iodine/chlorine
- d. Formalin
- e. Both c and d

14. If a total of 2,509 eggs did not hatch during incubation, based on the information provided in the video what percentage **of eggs that did not hatch** were “late dead?”

- a. 15.98%
- b. 10.29%
- c. 8.59 %
- d. 72.49%
- e. 11.51%

1819 infertile eggs + 289 early dead = 2108 pulled at candling
2509 total did not hatch
2509-2108 = 401 late dead
 $(401/2509)*100 = 15.98\%$

15. After Doug successfully filled this order another was placed shortly after. For this flock he placed 32,200 eggs into the setter. At d 18 candling he found that 2,453 eggs were infertile, and 368 were early dead. When he pulled the hatch at d 21 an additional 300 eggs were deemed late dead. For this flock what was the % hatch of fertile eggs? (Page C-120)

- a. 96.4%
- b. 96.8%
- c. 97.7%
- d. 97.9%
- e. 98.5%

32200-2453 = 29747 fertile eggs
368 early dead + 300 late dead = 668 mortality
 $(29747 - 668)/29747*100 = 97.68\%$ hatch of fertile