

**WA STATE FFA MEAT CDE
WRITTEN EXAM**

MULTIPLE CHOICE

Select only one answer (letter) per question. Bubble your selection on the associated Scantron. Only selections on the Scantron will be scored (4 points per question; 100 points total)

- _____ 1) The Jack in the Box outbreak of 1993 began in the state of Washington. Which of the following was the primary pathogen associated with this outbreak?
- a. *Clostridium perfringens*
 - b. *Salmonella enterica*
 - c. *Escherichia coli* O157:H7
 - d. *Escherichia coli* O145
- _____ 2) Which branch of the United States Department of Agriculture (USDA) is responsible for ensuring the wholesomeness of meat products?
- a. Agricultural Marketing Service
 - b. Food Safety Inspection Service
 - c. Food and Drug Administration
 - d. Agricultural Research Service
- _____ 3) What is the term for the time required to lapse between when an animal receives an antibiotic treatment and when the animal can be harvested to produce meat for consumption?
- a. Lairage
 - b. Payout period
 - c. Compensatory growth
 - d. Withdrawal period
- _____ 4) Which of the following is NOT a mode of action for beta-agonists?
- a. Increased protein production
 - b. Decreased fat degradation
 - c. Decreased protein degradation
 - d. Decreased fat production
- _____ 5) What is the approximate pH of muscle in a living animal?
- a. 9.0
 - b. 7.4
 - c. 5.6
 - d. 5.2

- _____ 6) When consumed in an amount to obtain 25 g of dietary protein, which of the following contains the fewest Calories?
- Beef sirloin steak
 - Peanut butter
 - Cheddar cheese
 - Quinoa
- _____ 7) Skeletal muscle is a highly organized structure. Which is the correct arrangement of skeletal muscle structures from most intact to least intact?
- Muscle fiber, Muscle bundle, Sarcomere
 - Sarcomere, Muscle fiber, Muscle bundle
 - Muscle bundle, Sarcomere, Muscle fiber
 - Muscle bundle, Muscle fiber, Sarcomere
- _____ 8) Which of the following is NOT a primal cut of a beef carcass?
- Shoulder
 - Rib
 - Plate
 - Round
- _____ 9) Which of the following is NOT used in the determination of USDA Quality Grade of a lamb carcass?
- Fat streaking in the flanks
 - Marbling score
 - Break joints vs. spool joints
 - Leg conformation
- _____ 10) Which of the following combinations of marbling score and maturity class should predict the most desirable level of eating quality in a beef carcass?
- Slightly abundant; E maturity
 - Moderate; A maturity
 - Modest; A maturity
 - Slight; C maturity
- _____ 11) Which of the following is NOT a recommended method of defrosting meat products?
- Leaving on the counter
 - Placing in the refrigerator
 - Placing in cold water
 - Using the microwave

- _____ 12) Which of the following is a parasite?
- a. *Clostridium botulinum*
 - b. Norovirus
 - c. *Vibrio vulnificus*
 - d. *Trichinella spiralis*
- _____ 13) What of the following is added to meat products to prevent growth of *Clostridium botulinum*?
- a. Sodium chloride
 - b. Potassium lactate
 - c. Ascorbic acid
 - d. Sodium nitrite
- _____ 14) Which of the following is synthetic hormone commonly incorporated into growth-promoting implants?
- a. Estradiol
 - b. Testosterone
 - c. Trenbolone acetate
 - d. Progesterone
- _____ 15) Which of the following types of fatty acids contain single bonds between carbon atoms?
- a. Omega-3 fatty acids
 - b. Saturated fatty acids
 - c. Monounsaturated fatty acids
 - d. Polyunsaturated fatty acids
- _____ 16) What protein comprises the thick filament of muscle?
- a. Calpain
 - b. Troponin
 - c. Myosin
 - d. Actin
- _____ 17) Which of the following must be present for meat to appear red in color?
- a. Water
 - b. Nitrogen
 - c. Oxygen
 - d. Hydrogen
- _____ 18) Which of the following is NOT characteristic of meat from mature animals in comparison to meat from young animals?
- a. Decreased tenderness
 - b. More intense flavor
 - c. Coarser texture
 - d. Lighter and brighter color

- _____ 19) Which of the following is responsible for the yellow fat on carcasses of grass-fed animals?
- Carotene
 - Lignin
 - Vitamin E
 - Calcium
- _____ 20) What is the maximum amount of time that food can be safely held in the temperature danger zone of 40 °F to 140 °F before needing to be discarded?
- 2 hours
 - 4 hours
 - 6 hours
 - 8 hours
- _____ 21) Bromelain is an enzyme extracted from pineapple. Which of the following is the primary use for bromelain in meat products?
- To increase the amount of marbling
 - To increase tenderness
 - To increase water holding capacity
 - To improve red color
- _____ 22) What is the temperature at which meat begins to freeze?
- 32 °F
 - 30 °F
 - 28 °F
 - 0 °F
- _____ 23) Which of the following pathogens is associated with miscarriages in pregnant women?
- Listeria monocytogenes*
 - Escherichia coli*
 - Clostridium botulinum*
 - Campylobacter jejuni*
- _____ 24) What is the term for the removal of the internal organs during slaughter?
- Exsanguination
 - Scalding
 - Lairage
 - Evisceration
- _____ 25) Which of the following is NOT required on the label of USDA-inspected retail product?
- Establishment number
 - Net weight
 - Sell-by date
 - Ingredient list

Question	Answer	Source (iCEV, Meat Science and Food Safety PPT, 2011-2016)
1	C	Slide 24
2	B	Slides 14, 15, 16
3	D	Slide 34
4	B	Slide 31
5	B	Slide 46
6	A	Slide 56
7	D	Slide 60
8	A	Slide 62
9	B	Slides 94,95
10	B	Slides 89, 90, 91, 92
11	A	Slide 117
12	D	Slides 129, 191
13	D	Slide 163
14	C	Slide 29
15	B	Slide 49
16	C	Slide 59
17	C	Slides 71, 72
18	D	Slides 86, 87, 89, 90, 92
19	A	Slide 86
20	B	Slide 181
21	B	Slide 168
22	C	Slides 105, 106, 111
23	A	Slide 190
24	D	Slide 37
25	C	Slides 73, 76