

# MEAT SCIENCE AND TECHNOLOGY

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- 1 Natural casings are prepared from \_\_\_\_\_  
a Mucosa            b submucosa            c muscular layer    d serosa
- 2 Most commonly used barrier bag for vacuum packaging are \_\_\_\_\_  
a polyethylene    b poly vinylidene    c polypropylene    d polyester
- 3 Frankfurter is a typical example of \_\_\_\_\_  
a uncooked sausage            b cooked unsmoked sausage            c Cooked smoked sausage            d Uncooked smoked sausage
- 4 Cold shortening of muscle occurs when pre-rigor muscle is exposed to a temperature between \_\_\_\_\_  
a -5 to -10 °C    b 0 to 15 °C            c -1.5 to -3 °C            d -20 to -30 °C
- 5 Myofibrillar proteins are \_\_\_\_\_  
a globular            b fibrous            c globular and fibrous            d none of the above
- 6 Bloom is referred as the property of \_\_\_\_\_  
a fresh carcass    b frozen carcass    c cooked meat            d smoked meat
- 7 \_\_\_\_\_ is referred as inspectors lymph node  
a bronchial            b mediastinal            c supra scapular            d popliteal
- 8 Livestock unit is \_\_\_\_\_

- a 1 adult bovine : 2 pigs : 3 calves : 5 sheep    b 1 adult bovine : 3 pigs : 5 calves : 10 sheep    c 1 adult bovine : 3 pigs : 3 calves : 5 sheep    d 1 adult bovine : 2 pigs : 3 calves : 6 sheep
- 9 The colour of the pigment nitrosohemochromogen is \_\_\_\_\_
- a brown                      b pink                      c red                      d bright red
- 10 Casings prepared from small intestine of sheep are called \_\_\_\_\_
- a weasand                      b middles                      c bungs                      d rounds
- 11 Average protein content of carcass meal \_\_\_\_\_
- a 50%                      b 30%                      c 70%                      d 40%
- 12 Cytoplasm of muscle fiber is called as \_\_\_\_\_
- a protoplasm                      b sarcoplasm                      c sarcomere                      d ground substance
- 13 Bacterial spoilage in chilled meat is due to bacteria of \_\_\_\_\_ group
- a psychrophilic                      b mesophilic                      c thermophilic                      d microaerophilic
- 14 Meat pattices are cooked in an oven to an internal temperature of \_\_\_\_\_
- a 70 °C                      b 90 °C                      c 60 °C                      d 85 °C
- 15 Glycogen content of normal bovine muscle ranges from \_\_\_\_\_
- a 0.5-1.3%                      b 0.1-1%                      c 2 – 3.5 %                      d 1- 3 %
- 16 When meat is frozen slowly the largest crystals are formed \_\_\_\_\_
- a inside muscle fiber                      b between muscles                      c out side muscle fiber                      d between epi and perimysium
- 17 The temperature of the retort during canning of meat chunks is \_\_\_\_\_
- a 100 °C                      b 120 °C                      c 150 °C                      d 200 °C
- 18 The radiation dose of \_\_\_\_\_ is sufficient to kill the pathogenic bacteria.
- a 0.1 M rad                      b 1 M rad                      C 1.5 M rad                      d 2 M rad
- 19 Water activity in intermediate moisture foods is maintained between \_\_\_\_\_

- a 0.6 – 0.85%      b 0.3 – 0.4 %      c 0.8 – 1 %      d 0.2 – 0.5 %
- 20 Freezing point of meat lies between \_\_\_\_\_
- a - 1 to –1.5 °C      b - 2 to – 0 °C      c 0 to – 3 °C      d - 1 to 0 °C
- 21 Scalding temperature in pigs is about \_\_\_\_\_
- a 50 - 55 °C      b 62 - 64 °C      c 70 - 85 °C      d 90 °C
- 22 Animals should be bled within \_\_\_\_\_ seconds after electrical stunning to avoid muscle splashing.
- a 60 sec      b 30 sec      c 90 sec      d 10 sec
- 23 The end product of ATP break down responsible for flavour is \_\_\_\_\_
- a hypoxanthine      b furfural      c creatinine      d furfural
- 24 The characteristic yellow colour of egg yolk is due to \_\_\_\_\_
- a carotene      b vitamin- a      c biotin      d xanthophyll
- 25 Brucellosis is also known as \_\_\_\_\_
- a BVD      b bangs diseased      c black disease      d mucosal disease
- 26 Since Jan 2001 Britain is facing a severe crisis in beef production due to out break of \_\_\_\_\_
- a FMD      b RP      c Mad cow disease      d Brucellosis
- 27 Strength of pickle solution is measured by \_\_\_\_\_
- a Barometer      b Torry meter      c Gyrometer      d Salinometer
- 28 Emulsion is prepared in \_\_\_\_\_
- a Tumbler      b Homogenizer      c Flaker      d Bowl chopper
- 29 The carcinogenic compounds in smoke are \_\_\_\_\_
- a benzyl pyrenes      b carbonyls      c aldehydes      d PAH
- 30 Case on systems of dressing is used in \_\_\_\_\_

- a cattle                      b buffalo                      c sheep                      d pig
- 31 Each muscle fiber is covered by \_\_\_\_\_
- a perimycium      b epimysium      c endomysium      d fascia
- 32 Bacon is prepared from \_\_\_\_\_
- a boston butt      b leg portion      c picnic shoulder      d bellies
- 33 Multiplication of bacteria is highest during \_\_\_\_\_ phase of growth.
- a lag phase      b log phase      c phase of + ve acceleration      d stationary phase
- 34 The indicator of fecal contamination is \_\_\_\_\_
- a E.coil      b Salmonella      c S.faecalis      d S. bovis
- 35 Iodine no. in horse fat is \_\_\_\_\_.
- a 70 - 85      B 35 - 46      c 50 - 70      d 30 - 50
- 36 Dressed chicken can be stored in a refrigerator at 2°C for \_\_\_\_\_.
- a 7 days      b 2 days      c 10 days      d 15 days
- 37 The fat content of chicken egg albumen is \_\_\_\_\_
- a 0.2 %      b 10 %      c 15 %      d 20 %
- 38 Green rot in egg is caused by \_\_\_\_\_
- a Pseudomonas      b Staphylococcus      c Serratia      d Cladosporium
- 39 During ageing the lysosomal enzymes act at the pH \_\_\_\_\_
- a below pH 6      b 7 - 9      c 10      d 12
- 40 The optimum concentration of CO<sub>2</sub> gas in stunning of pigs is \_\_\_\_\_
- a 70%      b 20%      c 50%      d 90%
- 41 Parasites in meat such as *Cysticercus bovis* and *Trichenella spiralis* are killed by \_\_\_\_\_

- a 0.01 – 0.1 M rad    b 0.5 – 1 M rad    c 1 – 2 M rad    d 10 M rad
- 42 The voltage during electrical stunning of sheep is usually\_\_\_\_\_
- a 40 V                    b 75 – 80 V                    c 90 V                    d 120 V
- 43 Speed of freezing of meat is the time taken to pass from\_\_\_\_\_
- a 0 to -5<sup>0</sup> C                    b +2 to -2<sup>0</sup> C                    c +1 to -1<sup>0</sup> C                    d +5 to -2<sup>0</sup> C
- 44 Antibacterial action of cloves is due to\_\_\_\_\_
- a eugenol                    b isothiocyanate                    c carbonic acid                    d phenol
- 45 Wet dog flavour is typical of \_\_\_\_\_
- a AFD meat                    b Irradiated meat                    c chilled meat                    d cooked meat
- 46 The product corned beef, the corn refers to\_\_\_\_\_
- a Corn flavour                    b granulated salt                    c Na – Nitrite                    d polyphosphate
- 47 A minimum of\_\_\_\_\_nitrite is necessary to ensure normal colour and flavour in cured meats.
- a 20 – 40 ppm                    b 100 ppm                    c 200 ppm                    d 10 ppm
- 48 Bound water forms about\_\_\_\_\_% of the total water content in meat
- a 10 %                    b 5 %                    c 20 %                    d 25 %
- 49 Ultimate pH of meat protein is\_\_\_\_\_
- a 4.5                    b 5.4                    c 5                    d 4
- 50 The moisture content of AFD meat is \_\_\_\_\_
- a 2%                    b 10%                    c 15%                    d 20%
- 51 W.B. Shear force meter measure the strength required in\_\_\_\_\_of meat.
- a biting                    b tearing                    c chewing                    d cutting
- 52 Thaw rigor is caused by the activity of\_\_\_\_\_enzyme
- a lysozyme                    b protease                    c ATPase                    d lipase
- 53 For preparing fermented sausages the\_\_\_\_\_culture is used.
- a Lactobacillus                    b Leuconostock                    c Achromobactor                    d Pseudomonas
- 54 \_\_\_\_\_ions are responsible for muscle contraction
- a Na                    b K                    c Ca                    d SO<sub>4</sub>
- 55 Recovery of fat from the dead carcasses is called as \_\_\_\_\_
- a rendering                    b simmering                    c braising                    d pasteurization



- 71 \_\_\_\_\_ is the most tender cut in beef carcass.  
 a Rump                      b Short plate                      c Chuck and blade                      d Sirloin
- 72 Colour of rabbit meat is \_\_\_\_\_  
 a pale brown                      b red                      c cherry red                      d pink
- 73 Main objective of adding salt during meat emulsion preparation is \_\_\_\_\_  
 a to extract myofibrillar proteins                      b antioxidant                      c antimicrobial                      d flavour
- 74 \_\_\_\_\_ is the GRAS chemical additive  
 a citric acid                      b  $\text{KMnO}_4$                       c Sodium hypochlorite                      d benzylpyrines
- 75 Technical fat is used in manufacture of \_\_\_\_\_  
 a soap                      b fat liquor                      c lubricant                      d edible oils
- 76 Fatty acid composition of oils can be estimated by \_\_\_\_\_  
 a TLC                      b GLC                      c Refractometer                      d AAS
- 77 Average dressing % in Indian goats is about \_\_\_\_\_  
 a 35-50%                      b 55%                      c Above 70%                      d 60%
- 78 \_\_\_\_\_ instrument is used to measure the smoke density in smoke houses.  
 a Electric eye                      b Plannimeter                      c Ameter                      d Densitometric scan
- 79 Alarm water content in fat free dehydrated meats is \_\_\_\_\_  
 a 15%                      b 30%                      c 40%                      d 50%
- 80 Ruffle fat is a fat around \_\_\_\_\_  
 a kidney                      b mesentery                      c thoracic region                      d rectum
- 81 Haugh index is used to determine the internal quality of \_\_\_\_\_  
 a milk                      b meat                      c paneer                      d egg
- 82 \_\_\_\_\_ initiated the concept of canning of foods.  
 a B.Franklin                      B R.A.Lawrie                      c N.Appert                      d R.Hamm
- 83 The food poisoning caused by *Bacillus cereus* is referred as \_\_\_\_\_  
 a infection                      b infestation                      c intoxication                      d ingestion
- 84 The quality standards for foods all over the world are monitored as per \_\_\_\_\_  
 a ISO                      b APEDA                      c OIE                      d FAO
- 85 Yellow fever is an example of \_\_\_\_\_ zoonoses

- a direct zoonoses    b meta zoonoses    c cyclo zoonoses    d sapro zoonoses
- 86 An association between two organism in which both are benefited is \_\_\_\_\_  
a symbiosis    b synnecrotic    c antagonism    d mutualistic
- 87 Mycobacterium piscium causes T.B.in \_\_\_\_\_  
a cattle    b sheep    c frog    d birds
- 88 Anthrax is also known as \_\_\_\_\_  
a Charbon    b Struck    c Weil's disease    d Undulant fever
- 89 Clenbutarol is an \_\_\_\_\_  
a growth promoter    b antiseptic    c antibiotic    d lipolytic agent
- 90 \_\_\_\_\_ are the principal host for Leptospirosis  
a cattle    b man    c lizard    d rodent
- 91 All organophosphorous compounds produce \_\_\_\_\_ residue in tissues.  
a little or no    b moderate    c high    d heavy
- 92 \_\_\_\_\_ is taken for toxic residue analysis.  
a liver    b heart    c spleen    d intestine
- 93 The method of packing dressed broiler chicken is known as \_\_\_\_\_  
a trussing    b wrapping    c tetrapacking    d none of the a,b,c
- 94 Scalding temperature for turkey is usually \_\_\_\_\_ -  
a 60° C for 60 sec    b 53 ° C for 120 sec    c 60° C for 120 sec    d 93 ° C for 5 sec
- 95 Meat bone ratio in dressed broiler is approximately \_\_\_\_\_  
a 4:1    b 2:1    c 3:1    d 5:1
- 96 National Research Center on meat is situated in \_\_\_\_\_  
a Bombay    b Calcutta    c Hyderabad    d Delhi
- 97 In India, processed meat products from chicken are manufactured by \_\_\_\_\_  
a Lipton    b Venkys    c Hindustan liver    d Griffon
- 98 Meat analogues are prepared from \_\_\_\_\_  
a pork    b vegetable proteins    c beef    d mutton
- 99 The enzyme present in chalyza of chicken gee which has antibacterial effect is \_\_\_\_\_  
a lysozyme    b amylase    c protease    d pectinase



100 Meat containing sarcocyst is\_\_\_\_\_

a rejected on b rejected due to c passed d passed with  
aesthetic ground zoonoses caution of  
cooking

**ANSWER KEY**

Sr no.	Answer	Sr no.	Answer	Sr no.	Answer	Sr no.	Answer
1	b	26.	a	51.	d	76.	b
2	b	27.	d	52.	c	77.	a
3	b	28.	d	53.	a	78.	a
4	b	29.	d	54.	c	79.	a
5	c	30.	c	55.	a	80.	a
6	a	31.	c	56.	a	81.	d
7	a	32.	d	57.	b	82.	c
8	a	33.	b	58.	a	83.	a
9	a	34.	a	59.	a	84.	a
10	d	35.	a	60.	a	85.	b
11	a	36.	a	61.	b	86.	d
12	b	37.	a	62.	c	87.	c
13	a	38.	a	63.	c	88.	a
14	d	39.	a	64.	c	89.	a
15	a	40.	a	65.	b	90.	d
16	a	41.	a	66.	b	91.	a
17	b	42.	b	67.	a	92.	a
18	a	43.	a	68.	d	93.	a
19	a	44.	a	69.	d	94.	d
20	a	45.	b	70.	a	95.	a
21	a	46.	b	71.	d	96.	c
22	b	47.	a	72.	a	97.	b
23	a	48.	b	73.	a	98.	b
24	a	49.	b	74.	a	99.	a
25	b	50.	a	75.	a	100.	A

### Answer the following question

1. What are consists of lean meat or muscle?
2. Draw the structure of muscle?
3. Define Postmortem changes in muscle, and then write the Postmortem Changes in Muscle (as muscle is converted to meat)?
4. Talk about the protein & iron as a nutritional value of meat?
5. What are the factors of  
A. Manufacturing cuts    B. The toughness of contracted muscles
6. Explain thaw rigor & cold shortening which happen in meat?
7. What are the differences between actin and myosin proteins?

### Complete the following sentences

The major components of meat quality are .....,  
..... and .....

1. Water holding capacity is defined as ..... There are three types of water in the muscle, namely ....., ..... and .....
2. Meat tenderness is affected by two main muscle components which are ....., ..... While meat juiciness is affected by ..... and .....
3. Principles of meat preservation is to ..... and .....
4. Meat curing is defined as ..... The objectives of meat curing include ....., ....., ..... and .....
5. Smoked meat is acted as ....., ....., ..... and .....
6. Under aerobic conditions bacteria cause ....., ....., ..... and .....
7. The spoilage organisms which are mainly responsible for the spoilage of meat and meat products belong to .....
8. .... and ..... organize a major cause of non-microbial spoilage in meat, especially under pro-oxidative conditions such as .....

### Answer the following questions

1. What are the stages of the meat color pigments stability?
2. What does meat spoilage mean? How microbial spoilage is occurs?
3. What are the preservation techniques (methods) of meat? How is each technique work?
4. What are the causes of the 2 indications that meat has spoiled  
a) Bad odor      b) Oxidative rancidity      c) Discoloration during freezing

### Explain TOW of the following questions using diagram

1. The role of meat science and technology in various scopes.
2. Gross (altar) structure of skeletal muscle.
3. Major components of meat quality.

### What are the techniques applied for of the following

1. Reducing water loss in meat.
2. Minimize the risk of oxidation.
3. Minimize protein denaturation and microbial activity.

### Q3// Justify the following statements (15 Marks)

1. Meat and meat products are important for human consumption.

2. Carcass chilling and freezing during postmortem carcass handling.
3. Skeletal muscle is principal interest to meat industry.

**Q4// Answer the following questions (40 Marks)**

5. What are the differences between **ONE** of the following
  - a. Aerobic and anaerobic glycolytic pathway
  - b. Rigor mortis in living muscles and post mortem muscles
6. How do postmortem changes affect water loss in meat?
7. How electrical stimulation is involved in rapid rigor development and improved tenderization of carcass?
8. What are the changes in quality of meat caused by (**ONLY TWO**)
  - A. Protein denaturation
  - B. Rigor mortis not done properly
  - C. The contribution of stromal protein more than 15%

**Suggested reading:**

1. Meat Hygiene - Gracey
  2. Principles of meat science -John. C. Forrest
  3. Modern abattoir practices & animal byproducts technology - B.D.sharma
  4. Meat & meat products technology-B.D Sharma
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