IASI UNIVERSITY OF LIFE SCIENCES
FACULTY OF VETERINARY MEDICINE
SPECIALIZATION: VETERINARY MEDICINE IN ENGLISH

QUESTIONS FOR THE PREPARATION OF THE DISSERTATION EXAM JUNE 2026

ANATOMY

1. Where is the parotid lymph center located?
    a. in the depth of the parotid gland
    b. at the caudal edge of the parotid gland, under the atlas wing,
    c. at the cranial edge of the parotid gland, ventrally to the temporo-mandibular joint.
    d. at the origin of the transverse artery of the face

2. What are the lymph nodes that collect the primary lymph from the eyes?
    a. lateral retropharyngeal lymph nodes
    b. mandibular lymph nodes
    c. parotid lymph nodes.
    d. medial retropharyngeal lymph nodes

3. What is the lymph center that collects the primary lymph from the temporomandibular joint?
    a. mandibular lymph center
    b. parotid lymph center
    c. the retropharyngeal lymph center
    d. pterygoid lymph center

4. Where are placed the mandibular lymph nodes in cattle?
    a. in the intermandibular space, at the tip of the mandibular gland
    b. in the intermandibular space, at the base of the tongue
    c. on the sides of the larynx.
    d. in the intermandibular space, along the sublingual artery

5. Who collect the primary lymph from the oral and nasal cavity?
    a. mandibular lymph nodes
    b. parotid lymph nodes
    c. lateral retropharyngeal lymph nodes
    d. pterygoid lymph nodes

6. Lateral retropharyngeal lymph nodes are placed:

a. under the wing of the atlas, on the occipital artery pathway

b. on the sides of the larynx

c. under the basal part of the occipital

d. on the ascending palatin artery (a. palatina ascendens) pathway

7. The medial retropharyngeal lymph nodes are placed:

a. dorsally to the larynx

b. dorsally to the pharynx, on the pathway of the ascending palatine artery

c. ventrally to the larynx, in the sagittal plane

d. at the origin of the lingual artery

8. Where are placed the superficial cervical lymph nodes in cattle?

a. cranially to the scapulum, in the subcutaneous connective tissue

b. cranially to the scapulum, between the scalenus and the cleidocephalicus muscles

c. medially to the scapulum, at the scapular insertion of the cervical ventral serratus muscle

d. cranially to the scapulum, under the cleidocephalicus muscle, nearby the ascending branch of the superficial cervical artery

9. Where are the cranial mediastinal lymph nodes?

a. into the thymic lodge

b. in the precardiac mediastinum, along the brachiocephalic trunk

c. in the precardial mediastinum, ventrally to the cranial cavae vein

d. in the precardial mediastinum, dorsally to trachea

10. Where are placed the middle mediastinal lymph nodes?

a. on the right side of the esophagus, dorsally to heart

b. at the bronchial bifurcation

c. between the base of the heart and the pericardial sac.

d. under the aortic club

11. In cattle, the caudal mediastinal lymph nodes are particular through:

a. they are developed (10-15 cm long), being located between the mediastinal layers, dorsally to the esophagus

b. they are missing

c. they developed (10-15 cm long), being placd into the ligament of the caudal vena cava

d. they are developed (10-15 cm long), being located between the mediastinal layers, ventrally to the esophagus

12. In cattle, the cranial tracheobronchial lymph nodes are placed:

a. at the origin of the tracheal bronchus

b. at the origin of the right cranial lobar bronchus.

c. they are missing.

d. at the origin of the bronchus of the left cranial lobe

13. Own (proper) axillary lymph nodes are located:

a. under the humeral insertion of the teres major muscle

b. under the humeral insertion of the infraspinatus muscle

c. at the origin of the ulnar collateral artery

d. at the origin of the subscapular artery

14. The lymph nodes of the first rib are found:

a. at the origin of the subscapular artery

b. medially to the shoulder joint, along the suprascapular artery

c. they are missing in horses

d. on the medial face of the first rib, on the pathway of the internal thoracic artery.

15. Who collect the primary lymph from the thoracic acropodium in cattle?

a. elbow lymph nodes

b. proper axillary lymph nodes

c. accessory axillary lymph nodes

d. lymph nodes of the first rib

16. What lymph nodes collect the primary lymph from the lateral side of the scapular and arm regions?

a. proper axillary lymph nodes

b. superficial cervical lymph nodes

c. deep cervical lymph nodes

d. prescapular lymph center

17. Vegetative innervation (Sympathetic and parasympathetic) of the stomach is ensured by:

a. celiac preganglionic fibers,

b. the greater splanhnic nerve,

c. the lesser splanchnic.

d. fibers from the coeliac plexus and the parietal gastric plexus

18. Into the layers of the great omentum which anastomosis is formed:
    a. between the right gastroepiploic artery and the left gastroepiploic artery,
    b. between lienal (splenic) artery and the hepatic artery,
    c. between spleniec artery and the gastroduodenal artery
    d. between the left gastric gastric artery and the right gastric artery

19. The morphological criteria for stomach differentiating in the animal are the following:
    a. the shape of the stomach
    b. the types of mucosa and the extended area
    c. after vascularization
    d. after innervation

20. The greater omentum is inserted on:
    a. hilum of the spleen
    b. the ceiling of the abdominal cavity
    c. duodenum
    d. jejunum

21. The morphological criteria for differentiating the ascending colon in animals are the folowing:
    a. the number of longitudinal muscular bands
    b. the aspect of the colon
    c. distribution arteries
    d. the position it occupies in the abdominal cavity

22. Which flexure (curvature) of the ascending colon in horses has the smallest caliber?
    a. sternal curvature,
    b. pelvic flexure,
    c. diaphragmatic curvature.
    d. they have similar caliber

23. The ligaments that fix the liver are the following:
    a. right triangular, left triangular, hepato-renal, hepato-gastric, falciforme, round,
    b. right triangular, left triangular, hepato-gastric, falciforme, round
    c. hepato-renal, hepato-gastric, right triangular, left triangular
    d. round ligament, the greater and the lesser omentum

24. The morphological criteria for differentiating the liver in domestic animal are:
    a. the liver color
    b. interlobar incisions
    c. the aspect of the lobes
    d. number of lobes

25. The large mesentery is shorter at:
    a. cattle
    b. sheep
    c. pigs
    d. dogs

26. The innervation of the anus is performed by:
    a. vegetative fibers from the hypogastric plexus and caudal rectal nerves,
    b. vegetative fibers from the hypogastric plexus and pudendal nerves,
    c. vegetative fibers of the hypogastric plexus, caudal rectal nerves and perineal nerves
    d. fibers from the pudendal nerves

27. In horses, the celiac artery ends with:
    a. pancreatic, gastric and hepatic arteries;
    b. hepatic and splenic arteries;
    c. hepatic, splenic and left gastric arteries
    d. hepatic, splenic, left gastric and pancreato-duodenal arteries

28. The transverse colon is supplied by:
    a. dorsal colic artery (right fascicle);
    b. caudal mesenteric artery;
    c. middle colic artery;
    d. ventral colic artery

29. What are the roots of portal vein in horses?
    a. splenic, gastric, cranial mesenteric and caudal mesenteric veins;
    b. splenic, gastric, jejunal and colic veins,
    c. splenic, cranial mesenteric and caudal mesenteric veins
    d. splenic, gastric, cranial mesenteric, caudal mesenteric and rectal mesenteric veins;

30. In horses, the cranial rectal artery originates from:
    a. the caudal mesenteric artery;
    b. the cranial mesenteric artery;
    c. the internal pudendal artery.
    d. the vaginal (or prostatic) artery

31. The orifice through which the portal vein perforates the diaphragm is located:
    a. between the left and right pillars;
    b. between the left pillar and the left intermediate;
    c. no answer is correct.
    d. at the top of the lateral right pillar

32. The right gastroepiploic artery comes from:
    a. the left gastric artery
    b. the hepatic artery
    c. the gastroduodenal artery
    d. splenic artery

33. The caudal flexure of the duodenum (duodeno-transverse flexure) is placed:
    a. caudally to the origin of caudal mesenteric artery
    b. cranially to the origin of the celiac artery
    c. caudally to the origin of the cranial mesenteric artery
    d. cranially to the origine of the cranial mesenteric artery

34. In horses, the top of th cecum is particular through:
    a. it is placed on the floor of the abdominal cavity
    b. it is not sacculated
    c. it is connected to the ventral colon by the ceco-colic ligament
    d. it is placed on the floor of the abdominal cavity between loops I and II

35. The horse's pancreas has a ring through which it passes:
    a. the caudal vena cava
    b. the cranial vena cava
    c. the portal vein
    d. the splenic vein

36. In specis, the kidneys are differentiated through:

a. their color

b. the aspect of the cortical area

c. vascular drawing

d. after the renal pelvis

37. In species, the lungs are differentiated by:

a. the lobular design

b. the tracheal bronchus

c. interlobar incisures

d. the aspect of the lobes

38. In animals, lungs are not differentiated by:

a. segmental and subsegmental bronchi

b. tracheal bronchus

c. interlobar incisure

d. the aspect of lung lobules

39. Where the cecum is projected in the horse?

a. on the right side, ventral to the midline of the abdomen

b. in the right flank, occupying the flank, the chord of the flank and the slope of the flank

c. in the hollow of the right flank.

d. in the hollow of the left flank

40. Where is projected the ascending colon of the horse:

a. on the right side, below the midline of the abdomen

b. on the left side, below the midline of the abdomen

c. on the right and left sides, below the midline of the abdomen.

d. on the ventral face of the abdomen

41. In horses, on the right side of the abdomen, the liver has the following projecting area:

a. is not projected

b. cranially, is delimited by the diaphragm, ventrally by the middle line of the abdomen and caudally by a line between the base of the 17th rib and the middle of the 15th rib

c. cranially is delimited by the diaphragm, ventrally by the midline of the abdomen and caudally by the 10th rib

d. the caudal midline, below the diaphragm

42. The external pudendal artery is discovered as follows:

a. through the incision of the skin on the side of the prepuce

b. through an incision of the skin at the level of the caudo-medial commissure of the superficial inguinal ring

c. through an incision of the skin near the cranio-lateral commissure of the superficial inguinal ring

d. at the tip of the femoral trigone

43. In boars, the superficial inguinal ring appears as a slit, being placed:

a. cranially to the pubis and laterally to the white line

b. in the subanal region

c. over the ischiadic arch, lateral to the perineal ridge

d. in the hypogastric region

44. The inguinal canal represents:

a. the path of the testicular cord in the groin (inguinal) region.

b. the space between the two inguinal rings

c. the testicular cord pathway from the origin to the testicle

d. the space traversed by the testicle during testicular migration

45. In horses, the dorsal artery of the penis comes from:

a. the symmetrical anastomosis of the pudendal arteries (internal and external)

b. the anastomosis of the caudal artery of the penis with the median artery of the penis

c. the anastomosis of the cranial artery of the penis with the median and caudal artery of the penis

d. the median artery of the penis.

46. The blocking of the dorsal nerve of the penis is performed:

a. at the level of the ischiadic arch, lateral to the root of the penis

b. on the dorsal face of the penis, in the inguinal region.

c. at the level of the superficial inguinal ring

d. lateral to the anus, into the paraanal fosse.

47. The testicular cord consists of:

a. the testicular artery and vein

b. the artery, the vein and the deferens ductus covered by serosa

c. the artery, the vein and the deferens ductus, covered by the fibrous layer.

d. the artery, the vein, the cremaster muscle and deferens ductus, covered by the serous-fibrous layer.

48. The external cremaster muscle originates from:

a. the internal oblique muscle of the abdomen

b. the external oblique muscle of the abdomen

c. the rectus abdominis muscle

d. the transverse muscle of the abdomen

49. The vaginal process includes:

a. the superficial and the deep fascia of the trunk

b. the fibrous-serous layer

c. the tunica flava of the abdomen.

d. the parietal peritoneum

50. In dogs, the testicular pouches are supplied by:

a. the internal pudendal artery

b. the external pudendal artery and the internal pudendal artery

c. the obturator artery.

d. the iliohypogastric artery

51. The pampiniform plexus:

a. it is formed by the testicular vein

b. it is placed at the cranial pole of the testicle

c. it is formed by the epididymal canal

d. it is placed in the tail of the epididymis

52. Who sensory innervates the skin of the dorsal face of the carpus in horses?

a. the dorsal carpal nerve

b. the cranial antebrachial cutaneous nerve and the dorsal carpal nerve

c. sensory branches of the palmar nerves.

d. the superficial branch of the radial nerve.

53. What are the vascular-nervous structures that pass through the superficial layer of the carpal flexor retinaculum (palmar anular carpal ligament)?

a. the palmar artery and the medial palmar nerve

b. palmar artery, palmar vein and palmar nerves

c. the radial and the ulnar arteries, the radial and the ulnar veins and the lateral palmar nerve.

d. the radial and the ulnar arteries, the radial and the ulnar veins, the tendon of the flexor carpi-radialis muscle and the lateral palmar nerve.

54. What are the structures that pass through the deep layer of the carpal flexor retinaculum (palmar anular carpal ligament)?

a. the palmar artery and the medial palmar nerve

b. the palmar artery, the palmar vein and the palmar nerves

c. the radial and the ulnar arteries, the radial and the ulnar veins and the lateral palmar nerve.

d. palmar artery, medial palmar nerve and tendons of the deep and the superficial digital flexor muscles

55. What is the anatomical basis of the metacarposamophalangeal joint in horses?

a. the metacarpal bones, the first phalanx and the greater sesamoids

b. the distal extremity of the third metacarpal, the proximal extremity of the phalanx I and the great sesamoids.

c. the body of the second phalanx

d. the distal extremity of the third and the secondary metacarpals, the proximal extremity of the first phalanx and the greater sesamoids.

56. In horses, the vascular-nervous structures of the fetlock region are highlighted:

a. through an incision about 3 cm long placed on the sides

b. through an incision about 3 cm long, placed laterally to the greater sesamoids

c. through a long incision on the palmary face of the fetlock

d. through an incision on the dorsal face of the fetlock

57. Which innervates the hoof cushion and the sole in horses?

a. the caudal digital nerve

b. the caudal and the middle digital nerve

c. deep palmar nerve

d. the middle digital nerve

58. Digital veins in horses originate from:

a. the solear veins

b. the internal and external venous plexuses of the hoof cartilages

c. the anastomose between solear and coronary veins.

d. in the venous networh of the corium of the frog and bulbs of the heel

59. What are the structures that increase the length of the hoof capsule?

a. internal layer (lamellar) of the hoof

b. external layer (cuticula) and middle layer of the hoof

c. the corium of the sole and frog

d. papillae of the coronary corium that produce the horny tubules

60. In horses, the common digital artery II is the main vessel of the metacarpal region being found in:

a. parallel to the flexor tendons on the lateral face of the region

b. parallel to the flexor tendons on the medial face of th region

c. on the dorso-medial face of the metacarpus, passing over the metacarpal fascia

d. parallel to the flexor tendons, on the medial face, covered by the metacarpal fascia

61. Indicate the dorso-palmary succession of the tendons on the palmar (caudal) face of the metacarpal region in horses:

a. the interosseous, the deep flexor and the superficial flexor muscles

b. the superficial flexor, the interosseous and the deep flexor muscles

c. the interosseous, the deep flexor, the superficial flexor and lateral digital extensor muscles

d. the intermediate tendon, the sural triceps tendon and the tendon of the superficial flexor muscle.

62. The deep plantar nerve has following characteristics:

a. it originates from the lateral plantar nerve

b. it locates on the medial face of the long plantar ligament

c. it innervates the median interosseous muscle

d. it innervates the deep plantar flexor muscle

63. Through the deep carpal canal pass the following structures:

a. the superficial flexor muscle

b. the deep flexor muscle

c. the palmar artery

d. the medial palmar nerve

64.On the left face of the heart there are:

a. The subsinuous artery and the greater vein of the heart

b. The patraconal artery and the greater vein of the heart

c. The marginal artery of the left ventricle in cattle and dogs

d. Paraconal groove

65.The epicardium represents:

a. The visceral layer of the serous pericardium

b. The visceral layer of the pleura

c. The conjunctive layer from the fibrous pericardium

d. Continuation of the internal vascular layer on the hearth

66.The cardiac bones are placed into trigona fibrosa:

a. Placed at the level of atrio-ventricular openings
b. In the interseptal walls
c. at the base of great vessels of the heart.
d. Into the aorto-pulmonary ligament.

67. The apex of the heart belongs to:

a. the right ventricle
b. the left ventricle
c. the ventricular septum

68. Fossa ovalis represents:

a. A depression into the interatrial septum
b. A depression into the interventricular septum
c. A depression of the Botall foramen reminiscence
d. depression at the base of aorta

69. The left coronary artery has the origin into:

a. Aortic bulb
b. Aorta ascendens
c. In left ventricle, near the bicuspid valve
d. Valsalva sinuses.

70. The papillary muscles are formed by:

a. The own cardiac fibers
b. The unitive fibers
c. Both of them
d. Atrial unitive fibers

71. The fascicle Hiss branches pass to the marginal wall through:

a. Valves
b. Septo-marginal muscles
c. Together the unitive muscular fibers
d. They do not pass, forming an continue network under the endocardium.

72. The heart's innervation is:

a. autonomic, achieved by the nodal tissue
b. sympathetic
c. parasympathetic
d. motor

73.The Valsalva sinuses are located:

a. dorsally to the mitral valve
b. dorsally to the aortic valve
c. dorsally to the bicuspid valve
d. from where the coronary arteries originate

74.The pericardial cavity represents:

a. the space between the epicardium and the serous pericardium
b. the space between the visceral pericardium and the parietal pericardium
c. the space between the pleura and the pericardial sac
d. the space between the serous pericardium and the fibrous pericardium

75. Which of the listed components is included into a lymph node?

a. capsule
b. fibrous septa
c. lymph nodes
d. lymphatic sinus

76. The falciform ligament (round ligament) is related to the next structure:

a. vena cava
b. the diaphragm
c. liver
d. urinary bladder

77. The rays-like ditribution of vessels on the greater mesentery is found at:

a. bulls
b. cattle
c. pigs
d. rabbits

78. The vaginal ring represents:

a. the opening of the vagina in the vaginal vestibule
b. the superior inguinal ring covered by fibroserosa
c. the bottom of the annular sac formed by the vaginal opening of the cervix
d. the opening of the suburethral meatus in the cattle

79. The following organs are found in the pleural cavity:

a. the lungs

b. the heart

c. the thymus

d. no one organ

80. The tracheal bronchus is found in:

a. pigs

b. rabbits

c. cattle

d. horses.

PATHOPHYSIOLOGY

1. General adaptation syndrome (GAS) represents:

a) The specific response of the organism to the action of aggressive agents
b) The nonspecific response of the organism to the action of environmental aggressive agents
c) A specific reaction depending on the nature of the aggressor
d) A mechanism that appears only in acute diseases

2. Selye defined "stress" as:

a) A chronic disease of the nervous system
b) The functional restructuring of the organism under the action of stressful agents
c) An exclusively psychological disorder
d) A syndrome of bacterial origin

3. The mechanisms of general adaptation syndrome are based on the active participation of:

a) The sympatho-adrenergic system
b) The hypothalamic-pituitary-adrenocortical system
c) Only the central nervous system
d) Only the peripheral endocrine system

4. In stress, the enzyme tyrosine hydroxylase is activated in a proportion of:

a) 5%
b) 50%
c) 75%
d) 100%

5. The evolutionary phases of GAS are:

a) Alarm phase
b) Resistance phase
c) Exhaustion phase
d) Remission phase

6. Shock phenomena in the alarm phase are due to:

a) Vagal predominance
b) Sympathetic predominance
c) A protective reaction of the organism
d) Exclusive increase of catecholamines

7. Shock phenomena are characterized by:

a) CNS depression
b) Hypotension
c) Hypothermia
d) Hypertension

8. In countershock phenomena, the increase in adrenaline concentration determines:

a) Increased cardiac output
b) Increased ventilatory output
c) Increased blood glucose
d) Increased digestive activity

9. In the resistance phase of GAS, the following are observed:

a) Hypertrophy of the adrenal cortex
b) Hyperplasia of the adrenal cortex
c) Atrophy of the adrenal cortex
d) Decreased hormonal secretion

10. In the resistance phase, the adrenal cortex can increase its volume by approximately:

a) 10%
b) 20%
c) 30%
d) 40%

11. In the resistance phase, at the blood level, the following are observed:

a) Increased number of neutrophils
b) Decreased number of lymphocytes
c) Decreased number of eosinophils
d) Increased number of basophils

12. In the exhaustion phase of GAS, the following occurs:

a) Exhaustion of the organism's reactive capacities
b) Death
c) Complete recovery
d) Chronicity without consequences

13. Inflammation can be defined as:

a) A reaction of the organism to aggression
b) A specifically tumor disease
c) A set of local and general reactions
d) An exclusively local reaction

14. The inflammatory focus is characterized by the following phenomena:

a) Alterative
b) Vascular-exudative
c) Proliferative
d) Exclusively necrotic

15. External phlogogenic agents of a physical nature can be:

a) Trauma
b) Cold and heat
c) Ionizing radiation
d) Bacteria

16. Internal phlogogenic agents are represented by:

a) Hypoxia
b) Antigen-antibody complexes
c) Bile acids
d) Viruses

17. The mechanisms of the inflammatory reaction can be grouped into:

a) Initiation phase
b) Stabilization phase
c) Resolution phase
d) Mandatory chronicity phase

18. The initiation phase of inflammation lasts:

a) A few minutes
b) A few hours
c) A few days
d) A few weeks

19. Hageman factor XII is activated by:

a) Electronegative surfaces
b) Bacterial endotoxins
c) Proteolytic enzymes
d) Glucocorticoids

20. Activation of Hageman factor XII has the following consequences:

a) Initiates blood coagulation
b) Initiates fibrinolysis
c) Activates the kinin cascade
d) Inhibits inflammation

21. Kinins are:

a) Very powerful vasoactive agents
b) 15 times more active than histamine
c) Devoid of painful effects
d) Responsible for the appearance of the first sensations of pain

22. The action of kinins lasts:

a) 20-30 seconds
b) 2-3 minutes
c) 10-15 minutes
d) 1-2 hours

23. Complement fractions C3a and C5a determine:

a) Increased vascular permeability
b) Constriction of vascular smooth muscle fibers
c) Decreased permeability
d) Exclusive vasodilation

24. Histamine, the first mediator of inflammation:

a) Produces arteriolar vasodilation upstream
b) Produces vasoconstriction downstream
c) Is responsible for the sensation of itching
d) Has prolonged action for 24 hours

25. Histamine action is of short duration:

a) A few seconds
b) A few minutes up to 30 minutes
c) A few hours
d) A few days

26. Mast cells contain preformed mediators, such as:

a) Histamine
b) Prostaglandins
c) Leukotrienes
d) Interleukin-1

27. Serotonin released by platelets causes:

a) Capillary dilation
b) Venular constriction
c) Painful sensation
d) Venular vasodilation

28. The amplification phase involves:

a) Neutrophils
b) Eosinophils
c) Monocytes
d) Exclusively erythrocytes

29. Mediators of the amplification phase are represented by:

a) Prostaglandins
b) Leukotrienes
c) Platelet activating factor (PAF)
d) Only histamine

30. Arachidonic acid is metabolized through two main pathways:

a) Through cyclooxygenase → prostaglandins
b) Through lipoxygenase → leukotrienes
c) Through peroxidase → histamine
d) Through lipase → serotonin

31. Nonsteroidal anti-inflammatory drugs produce:

a) Inhibition of cyclooxygenase
b) Blockage of prostaglandin synthesis
c) Stimulation of prostaglandins
d) Activation of leukotrienes

32. The active hyperemia phase results in:

a) Increased local blood flow
b) Redness (rubor)
c) Increased local temperature (calor)
d) Pallor and hypothermia

33. Neutrophils migrate to the inflammatory focus through diapedesis, a phenomenon that:

a) Begins around 4 hours
b) Is maximum at 12 hours
c) Is maximum at 48 hours
d) Has no maximum moment

34. Macrophages in inflammation:

a) Have maximum diapedesis around 24 hours
b) Present the antigen to lymphocytes
c) Manufacture cytokines (IL-1, IL-6)
d) Do not participate in phagocytosis

35. Interleukin-1 (IL-1) is considered:

a) A "hormone of inflammation"
b) Responsible for inducing fever
c) A stimulator of leukocyte production
d) An inhibitor of inflammation

36. In the stabilization phase, blood coagulation control is ensured by:

a) Fibrinolytic activity
b) Antithrombin III
c) C-reactive protein
d) Histamine

37. Histamine released from mast cells is inactivated by:

a) Eosinophils
b) Neutrophils
c) Basophils
d) Lymphocytes

38. The resolution phase:

a) Evolves concurrently with acute events of the inflammatory process
b) Leads to clinical healing if there are no tissue destructions
c) Appears only after 30 days
d) Is independent of previous phases

39. Shock represents:

a) A serious disorder of the entire organism
b) An altered state of vital functions
c) A disease with specific anatomical substrate
d) An exclusively cardiovascular disorder

40. From a clinical point of view, shock is:

a) Acute circulatory failure
b) An imbalance between blood volume and vascular bed
c) Severe hypertension
d) An exclusively renal disorder

41. From a pathophysiological point of view, the common element of all forms of shock is:

a) Disturbance of uniform distribution of total blood volume
b) Decrease in effective circulating blood volume
c) Continuous and severe decrease in tissue perfusion
d) Arterial hypertension

42. Hypovolemic shock can be caused by:

a) Hemorrhages
b) Plasma losses
c) Hydroelectrolytic losses
d) Myocardial infarction

43. Cardiogenic shock is characterized by:

a) Primary decrease in cardiac output
b) Cardiac filling disorders
c) Cardiac emptying disorders
d) Primary increase in cardiac output

44. Vasogenic shock occurs as a result of:

a) Acute disturbance of vascular tone
b) Release of vasoplegic substances
c) Increased vascular tone
d) Severe hypertension

45. In hypovolemic shock, initially the following occurs:

a) Decreased blood volume
b) Decreased cardiac output
c) Decreased venous return
d) Increased blood volume

46. Hemodynamic reactions in shock aim at:

a) Reducing the vascular bed through selective vasoconstriction
b) Supplementing volemia
c) Redistributing total blood volume
d) Exclusively increasing the vascular bed

47. Stimulation of sympathetic tone in shock determines:

a) Generalized increase in vascular tone
b) Increased heart rate
c) Increased force of cardiac contraction
d) Decreased force of contraction

48. "Centralization of circulation" in shock means:

a) Mobilization of blood toward vital central organs
b) A true "blood autotransfusion"
c) Blood stagnation at the periphery
d) Uniform distribution of blood

49. In shock, blood volume supplementation is achieved through:

a) Mobilization of blood from peripheral deposits
b) Influx of interstitial fluids
c) Stimulation of water and electrolyte retention
d) Decreased renal reabsorption

50. Under hypoxic conditions at the microcirculation level:

a) Tissues ensure their energy needs through anaerobic metabolism
b) Lactic acid accumulates
c) The environment becomes acidic
d) Aerobic metabolism is stimulated

51. Local acidosis in shock determines:

a) Dilation at the level of arterioles and capillaries
b) Preservation of vasoconstrictor effect at the venule level
c) Vasoconstriction at the level of all vessels
d) Vasodilation at the venule level

52. The "ram strike" in shock refers to:

a) Invasion of the capillary bed with blood
b) Impossibility of blood passing through the venular barrier
c) Normal blood flow
d) Increased venous return

53. As a result of plasma extravasation in shock:

a) Blood viscosity increases
b) Platelets and erythrocytes form aggregates
c) "Sludge" appears
d) Blood viscosity decreases

54. In the initial phase of shock, hyperglycemia results from:

a) Stimulation of hepatic and muscular glycogenolysis
b) Gluconeogenesis
c) Decreased glucose utilization
d) Inhibition of glycogenolysis

55. In advanced phases of shock, the following occurs:

a) Hypoglycemia
b) Exhaustion of energy substrates
c) Severe hyperglycemia
d) Increased energy reserves

56. In shock, protein degradation determines:

a) Decreased proteinemia
b) Increased amino acidemia
c) Increased proteinemia
d) Decreased amino acidemia

57. Mobilization of lipids from deposits in shock leads to:

a) Transformation of triglycerides into fatty acids and glycerol
b) Increased lipoproteins
c) Increased blood viscosity
d) Decreased blood viscosity

58. Modifications of hydroelectrolytic balance in shock are characterized by:

a) Sodium migration into intracellular space
b) Potassium migration into extracellular sector
c) Hyponatremia
d) Hyperkalemia

59. Acidosis in shock results from:

a) Metabolism occurring under anaerobic conditions
b) Accumulation of lactic and pyruvic acid
c) Decreased pulmonary and renal function
d) Increased pulmonary function

60. Lactic acid concentration in shock:

a) Increases proportionally with shock severity
b) Constitutes an important prognostic indicator
c) Decreases in severe shock
d) Has no prognostic value

61. Early reversible shock is characterized by:

a) Normal blood pressure
b) Vasoconstriction at the microcirculation level
c) Cellular hypoxia
d) Systemic acidosis

62. Late reversible shock is characterized by:

a) Decreased blood pressure
b) Vasodilation and stagnation in microcirculation
c) Local acidosis
d) Increased blood pressure

63. Irreversible shock is characterized by:

a) Collapse of blood pressure
b) Disseminated intravascular coagulation
c) Release of lysosomal enzymes with tissue autodigestion
d) Normal blood pressure

64. Hemorrhagic shock occurs after hemorrhages exceeding:

a) 10% of total blood volume
b) 20% of total blood volume
c) 30% of total blood volume
d) 50% of total blood volume

65. Burn shock initially falls into the mechanism:

a) Hypovolemic
b) Cardiogenic
c) Vasogenic
d) Exclusively septic

66. In anaphylactic shock, large quantities are released:

a) Histamine
b) Serotonin
c) Bradykinin
d) Only glucocorticoids

67. Septic-toxic shock can occur following:

a) Severe infections with Gram-negative bacilli
b) Severe infections with Gram-positive bacilli
c) Only viral infections
d) Only fungal infections

68. Increased central temperature stimulates:

a) Heat loss mechanisms (thermolysis)
b) Heat conservation mechanisms
c) Decreased thermolysis
d) Increased thermogenesis

69. Decreased central temperature stimulates:

a) Heat increase mechanisms (thermogenesis)
b) Decreased thermolysis
c) Increased thermolysis
d) Decreased thermogenesis

70. Adaptive reactions of the organism to cold include:

a) Peripheral vasoconstriction
b) Piloerection
c) Huddling
d) Thermal shivering

71. Adaptive reactions of the organism to heat include:

a) Radiation
b) Conduction
c) Convection
d) Evaporation

72. Overheating is determined by:

a) Increased thermogenesis
b) Decreased thermolysis
c) Decreased thermogenesis
d) Exclusively increased thermolysis

73. The organism responds to overheating through:

a) Intensification of respiratory and cardiac activity
b) Peripheral vasodilation
c) Sweating
d) Peripheral vasoconstriction

74. Heat shock is:

a) A severe form of acute overheating
b) The result of large heat accumulation
c) A mild form of overheating
d) Severe hypothermia

75. Sunstroke results from:

a) Direct action of heat and solar light
b) Increased temperature at the cerebral level
c) Cerebral edema
d) Cerebral hypothermia

76. Febrile reaction is:

a) A nonspecific general adaptive-defensive reaction
b) Functional restructuring of the hypothalamic thermostat
c) A specific disease
d) An exclusively pathological disorder

77. Exogenous pyrogens are represented by:

a) Infectious agents or their products
b) Immune complexes
c) Products from inflamed or necrotic territories
d) Only interleukins

78. Cells that produce endogenous pyrogens are:

a) Mononuclear phagocytes
b) Endothelial cells
c) Keratinocytes
d) Only erythrocytes

79. Endogenous pyrogens are represented by:

a) Interleukins 1 (IL-1α, IL-1β)
b) Cachexin or TNF
c) IL-6
d) Only histamine

80. The evolution of febrile reaction includes the following phases:

a) Latency
b) Temperature rise
c) State
d) Temperature decrease

PHARMACOLOGY

1. Atropine exhibits the following pharmacodynamic actions?
    a) Activates peristalsis causing evacuation of the gastrointestinal tract
    b) Has an antispasmodic digestive effect
    c) Increases heart rate
    d) Has bronchodilator action

2. Regarding glycopyrrolate sodium, the following statements are false:
    a) The induced tachycardia is less pronounced compared to atropine
    b) It accelerates small intestinal motility in dogs
    c) It induces excitatory effects
    d) It is recommended in abdominal visceral spasms

3. During the recovery period from anesthesia, attention should be given to the following aspects:
    a) Prevention of heat loss
    b) Evolution of the pupil and position of the eyeballs
    c) Change in head position
    d) Postoperative hydration

4. Hypnotic substances exert which type of action?
    a) Depressant action on the CNS and facilitate the onset of physiological sleep
    b) Stimulant action on the CNS and facilitate the onset of physiological sleep
    c) Decrease brain activity and motor capacity
    d) Do not act on the CNS

5. Which of the following statements are correct regarding tranquilizers?
    a) They can be used in the excitation phase of certain nervous disorders
    b) They potentiate narcosis and/or local anesthesia
    c) They prevent surgical shock
    d) They have convulsant action

6. The vegetative-lytic syndrome induced by neuroleptics is characterized by:
    a) Activation/stimulation of the thermoregulatory center
    b) Antiemetic effect
    c) Increased appetite
    d) None of the above

7. Regarding xylazine, the following statements are true:

a) It has the ability to eliminate hypertonia induced by ketamine in dogs and cats
b) It has sedative action
c) It induces myorelaxant and analgesic effects
d) The duration of local anesthesia is approximately 15–80 minutes

8. Regarding detomidine, the following statements are true:

a) It is recommended for all animal species
b) It induces cardiovascular disturbances in horses similar to xylazine
c) It induces long-lasting sedation and analgesia
d) It cannot be combined with ketamine or butorphanol

9. Regarding atipamezole (Antisedan®), the following statements are true:

a) It is an α2-adrenoceptor agonist
b) It neutralizes the pharmacodynamic effects of xylazine, detomidine, medetomidine, and romifidine
c) The dose of atipamezole is 4–5 times higher than the anesthetic dose used
d) Special attention is not required in animals with heart failure or shock

10. Regarding medetomidine, the following statements are true:

a) When administered intravenously, it acts within at most 2 minutes
b) It induces bradycardia and bradypnea
c) The intensity of sedative and analgesic effects is not dose-dependent
d) It cannot be combined with opioids

11. Regarding diuretics, the following statements are true:

a) Furosemide, ethacrynic acid, and thiazides increase kaliuresis
b) Spironolactone inhibits sodium reabsorption and potassium and hydrogen secretion in the distal tubule
c) Mannitol (osmotic diuretic) produces predominantly aqueous diuresis
d) None of the above

12. Regarding the indications of thiazide diuretics, the following statements are false:

a) Chronic heart failure
b) Chronic hepatic and/or renal diseases
c) Acute heart failure
d) High doses cause hyperkalemia, hypernatremia, and hypermagnesemia

13. Regarding mannitol, the following statements are true:

a) It is indicated in early stages of acute renal failure

b) It is recommended as immediate treatment in acute intoxications with nephrotoxic substances

c) It is not indicated in acute intoxications with aminoglycosides, barbiturates, acetylsalicylic acid

d) It is not indicated in cerebral edema and acute glaucoma crisis

14. Regarding furosemide, the following statements are true:

a) It eliminates a large volume of isotonic or slightly hypotonic urine

b) It increases the excretion of sodium, potassium, chloride, calcium, and magnesium ions

c) The increase in diuresis occurs rapidly and is maintained for a short time

d) None of the above

15. Which of the following statements regarding pimobendan use are correct?

a) It is an inodilator used in chronic heart failure in dogs

b) It is a diuretic with beta-blocking properties

c) In cats, the half-life is approximately three times shorter than in dogs

d) It increases survival time and improves quality of life in dogs with congestive heart failure

16. The effects of digitalis cardiotonic glycosides are characterized by:

a) Positive inotropic effect

b) Positive bathmotropic effect

c) Negative dromotropic effect

d) Negative chronotropic effect

17. Which of the following recommendations regarding rehydration therapy are true?

a) It is recommended in hypovolemia due to dehydration

b) It is not indicated in acute and chronic diarrhea

c) It is recommended for exhausted animals

d) None of the above

18. Which factors determine the amount of fluid to be administered to an animal?

a) Hydration deficit

b) Maintenance fluid requirements

c) Ongoing fluid losses

d) None of the above

19. Regarding dextrans, the following statements are true:

a) They increase circulating volume
b) The duration of effect is approximately 6 hours
c) They are pharmacologically inactive
d) They are highly toxic

20. In selecting prudent antimicrobial therapy, the following statements are correct:

a) Broad-spectrum antimicrobials represent the first choice in recurrent infections
b) Sensitivity testing can guide therapeutic choice
c) Narrow-spectrum antimicrobials are preferred as first-line therapy
d) Antimicrobial combinations should be routinely used to prevent resistance

21. The prophylactic use of antimicrobials:

a) Should be avoided as a routine practice
b) Is justified in exceptional, case-specific indications
c) Is recommended in large populations to prevent antimicrobial resistance (AMR)
d) May substitute biosecurity measures

22. In the use of critically important antimicrobials:

a) They may be used if effective non-critical alternatives exist
b) They are indicated only when sensitivity testing supports their use
c) Cascade use must be clinically and ethically justified
d) They are recommended for routine metaphylactic treatments

23. In the oral administration of antimicrobials to groups of animals:

a) Group treatment is preferable to individual treatment whenever possible
b) Administration via water or feed must be limited to animals requiring treatment
c) Homogeneity of drug distribution is essential
d) Mass administration is recommended as a prophylactic method

24. Metaphylactic treatment is justified when:

a) There is clinical evidence of disease development within a herd
b) It is intended to compensate for management deficiencies
c) The veterinarian documents the necessity of treatment
d) It is applied prophylactically to healthy animals

25. In controlling antimicrobial resistance (AMR), the following measures are appropriate:

a) Reducing the use of agents that promote transmissible resistance
b) Using pharmacovigilance to identify therapeutic failures
c) Repeated use of subtherapeutic doses to select sensitive strains
d) Developing laboratory networks for sensitivity testing

26. Regarding the responsibilities of the veterinarian:

a) May prescribe antimicrobials without clinical examination if there is a similar history
b) Must prescribe only the amount necessary for a complete treatment
c) Must keep records of diseases and treatments administered
d) May delegate to the farmer the selection of the appropriate antimicrobial

27. In recurrent infections requiring repeated antimicrobial treatments:

a) Repeated switching of antimicrobials without other measures is recommended
b) The cause of recurrence must be investigated
c) Production and management conditions may be modified
d) Repeated treatments represent the optimal long-term solution

28. Prudent use of antimicrobials involves:

a) Periodic reassessment of treatment necessity
b) Reduction of perioperative use through aseptic techniques
c) Use of antimicrobials as a preferred alternative to vaccination
d) Use of effective alternative strategies such as vaccines

29. Prescription of antimicrobials for food-producing animals requires:

a) Inclusion of the withdrawal period in the prescription
b) Omission of the withdrawal period if treatment duration is short
c) Informing the owner about the withdrawal period
d) Compliance with product label provisions

30. Which statements regarding cascade use are correct?

a) It is routinely applied when a human medicinal product is preferred
b) It must be limited to exceptional situations
c) It may be used without justification if sensitivity tests are positive
d) In non-food-producing animals it must be strictly limited

31. What are the general principles of anti-infective therapy?

a) Optimal route of administration, dose, dosing frequency, and treatment duration
b) Identification of bacterial infection and microorganism susceptibility
c) Exclusion of microbiological factors
d) All are correct

32. Which of the following are azoles?

a) Fluconazole
b) Itraconazole
c) Voriconazole
d) Terbinafine

33. Which are adverse reactions of ketoconazole?

a) Hepatotoxicity
b) Vomiting
c) Steroidogenesis disturbances
d) Severe primary nephrotoxicity

34. Indications of itraconazole include:

a) Aspergillosis
b) Histoplasmosis
c) Dermatophytosis
d) Bacterial meningitis

35. Which antifungals act on the fungal cell membrane?

a) Azoles
b) Amphotericin B
c) Terbinafine
d) Caspofungin

36. Adverse reactions of fluconazole include:

a) Leukopenia
b) Neutropenia
c) Necrotic hepatitis
d) Thrombocytopenia

37. Which agents are active on the fungal cell wall?

a) Caspofungin
b) Micafungin
c) Anidulafungin
d) Griseofulvin

38. Characteristics of amphotericin B:

a) Intravenous administration
b) High plasma protein binding
c) Long half-life
d) Nephrotoxicity

39. Antifungal antagonism may occur between:

a) Azoles and amphotericin B
b) Polyenes and flucytosine
c) Itraconazole and ketoconazole
d) Fluconazole and griseofulvin

40. Treatment of dermatophytosis with *Microsporum canis* includes:

a) Systemic treatment
b) Topical treatment
c) Environmental decontamination
d) Isolation of infected animals

41. Which of the following statements regarding the pharmacodynamic actions of atropine is correct?

a) It stimulates intestinal peristalsis, promoting evacuation of the gastrointestinal tract
b) It induces relaxation of gastrointestinal smooth muscle, exerting an antispasmodic effect
c) It decreases heart rate by stimulating the vagus nerve
d) It produces bronchoconstriction

42. Atropine is used in pre-anesthesia to reduce:

a) Seizures
b) Stress
c) Salivary gland secretions
d) Pain

43. Which of the following statements regarding glycopyrrolate sodium is correct?

a) It crosses the blood-brain barrier and produces central excitatory effects
b) It causes a marked increase in intestinal peristalsis

c) It is used for its antispasmodic effect on abdominal viscera
d) It produces bronchoconstriction by stimulating muscarinic receptors

44. Which of the following measures is essential in monitoring a patient during the recovery period from anesthesia?

a) Monitoring pupil changes and eyeball position
b) Administering fluids exclusively orally immediately postoperatively
c) Completely restricting head movement without clinical evaluation
d) Avoiding measures to maintain body temperature

45. Which of the following inhalational anesthetics does not sensitize the myocardium to catecholamines?

a) Methoxyflurane
b) Enflurane
c) Isoflurane
d) Halothane

46. In general anesthesia with isoflurane, the induction and maintenance doses are:

a) Induction 3–5%; maintenance 1–2%
b) Induction 2.5–4.5%; maintenance 1–3%
c) Induction 3.5–4.5%; maintenance 2–4%
d) Induction 1.5–2.5%; maintenance 3–4%

47. Which of the following statements about thiobarbiturates is incorrect?

a) They rapidly distribute to the brain, quickly inducing narcosis
b) Upon redistribution to muscle and fat, brain concentration increases
c) Post-narcotic sleep is shorter in species with abundant adipose tissue
d) Post-narcotic sleep is longer in species with low adipose tissue

48. Which of the following pre-anesthetic drugs significantly reduces the risk of death during anesthesia in horses?

a) Xylazine
b) Acepromazine
c) Diazepam
d) Detomidine

49. In which dog breed can acepromazine cause fainting and syncope?

a) Doberman
b) Boxer
c) German Shepherd
d) Saint Bernard

50. Naloxone is a complete antagonist for which group of drugs?

a) Butyrophenones
b) Benzodiazepines
c) Alpha-2 agonists
d) Opioids

51. Non-steroidal anti-inflammatory drugs increase the risk of CNS adverse effects when administered concomitantly with which antibiotics?

a) Macrolides
b) Penicillins
c) Aminoglycosides
d) Quinolones

52. Which local anesthetic also has antiarrhythmic properties?

a) Procaine
b) Lidocaine
c) Bupivacaine
d) Mepivacaine

53. Mannitol belongs to which class of drugs?

a) Laxatives
b) Antibiotics
c) Osmotic diuretics
d) Analgesics

54. What is the primary site of action of furosemide?

a) Ascending limb of the loop of Henle
b) Descending limb of the loop of Henle
c) Proximal convoluted tubule
d) Distal convoluted tubule

55. Regarding the indications of furosemide, which statement is false?

a) It is useful in acute renal failure
b) It is recommended in acute pulmonary edema
c) It is indicated in acute drug intoxications
d) It does not produce disturbances in electrolytes, water balance, or acid-base balance

56. Which of the following is NOT a recognized adverse effect of furosemide?

a) Dehydration
b) Electrolyte depletion (e.g., hyponatremia, hypochloremia, hypokalemia)
c) Azotemia
d) Pulmonary toxicity (e.g., acute respiratory distress syndrome)

57. When is the use of spironolactone contraindicated?

a) In hypernatremic patients
b) In hyperkalemic patients
c) In patients with refractory congestive heart failure
d) When furosemide is co-administered

58. Concomitant administration of fluconazole and erythromycin may increase the risk of:

a) Nephrotoxicity
b) Hepatotoxicity
c) Cardiotoxicity
d) Encephalopathy

59. What is the main target of action of azoles?

a) DNA synthesis
b) Cell wall
c) Ergosterol synthesis
d) Fungal ribosomes

60. Which antifungal crosses the blood-brain barrier effectively and is useful in fungal meningitis?

a) Ketoconazole
b) Fluconazole
c) Terbinafine
d) Griseofulvin

61. Which antifungal is the drug of choice for invasive aspergillosis?

a) Posaconazole
b) Voriconazole
c) Ketoconazole
d) Flucytosine

62. Amphotericin B belongs to which class?

a) Echinocandins
b) Allylamines
c) Polyene antibiotics
d) Triazoles

63. Terbinafine primarily acts against:

a) Dermatophytes
b) Viruses
c) Gram-positive bacteria
d) Protozoa exclusively

64. Which antifungal is NOT administered orally, only intravenously?

a) Fluconazole
b) Caspofungin
c) Itraconazole
d) Ketoconazole

65. Flucytosine acts by:

a) Inhibiting DNA/RNA synthesis
b) Blocking ergosterol
c) Destroying the cell wall
d) Inhibiting mitochondrial function

66. Which antifungal is frequently associated with nephrotoxicity?

a) Posaconazole
b) Voriconazole
c) Amphotericin B
d) Terbinafine

67. Griseofulvin acts by:

a) Inhibiting mitosis in metaphase
b) Blocking ergosterol
c) Destroying the cell wall
d) Inhibiting RNA polymerase

68. Which antifungal has absorption enhanced by acidic gastric pH?

a) Fluconazole
b) Itraconazole
c) Caspofungin
d) Flucytosine

69. The mechanism of action of penicillin refers to:

a) Blocking bacterial cell wall synthesis
b) Accumulation of products that interfere with protein synthesis
c) Increasing protein and nucleic acid synthesis
d) Inhibition of protein synthesis

70. The spectrum of action of aminoglycosides refers to:

a) Pseudomonas aeruginosa
b) Gram-positive microorganisms, anaerobes, spirochetes
c) Gram-negative microorganisms, anaerobes
d) Gram-negative microorganisms, except anaerobes and viruses

71. What are the adverse effects of aminoglycosides?

a) Nephrotoxicity
b) Hepatotoxicity
c) Gastrointestinal mucosal irritation
d) Ototoxicity

72. Which of the following substances belongs to macrolide antibiotics?

a) Erythromycin
b) Cefotaxime
c) Doxycycline
d) Neomycin

73. What does the term “antibiotic” refer to?

a) Synthetic analogues of natural substances that destroy protozoa and helminths
b) Substances produced by microorganisms and their synthetic analogues that destroy or selectively inhibit the growth of other microorganisms
c) Inorganic or synthetic substances that destroy or selectively inhibit the growth of other microorganisms
d) Substances produced by microorganisms and their synthetic analogues that inhibit the growth of host cells

74. A good example of responsible antibiotic use in animals refers to:

a) Using a broad-spectrum antibiotic instead of a narrow-spectrum one
b) Prescribing antibiotics before vaccination to prevent possible infections
c) Avoiding antibiotics in bacterial infections secondary to viral infections
d) Selecting antibiotics based on antibiogram results

75. Which of the following uses of antibiotics in food-producing animals is no longer approved?

a) Prevention
b) Treatment
c) Control
d) Growth promotion

76. Which of the following substances belongs to glycopeptide antibiotics?

a) Carbenicillin
b) Neomycin
c) Vancomycin
d) Lincomycin

77. Cephalosporins are recommended for the treatment of:

a) Gram-negative infections
b) Viral infections
c) Gram-positive infections
d) Both gram-negative and gram-positive infections when penicillins are ineffective

78. What are the adverse effects of tetracyclines?

a) Hepatotoxicity, anti-anabolic effect
b) Dental hypoplasia, bone deformities
c) Gastrointestinal irritation, phototoxicity
d) All of the above

79. Rational antimicrobial combinations are used for:

a) Expanding antimicrobial spectrum
b) Preventing antibiotic resistance
c) Achieving antibacterial synergism
d) All of the above

80. The bacteriostatic effect means:

a) Inhibition of bacterial multiplication
b) Destruction of bacterial cells
c) Acceleration of bacterial cell division
d) Acceleration of division of young bacterial cells

ANIMAL WELFARE

1. Animal Welfare and Protection Science is defined as:
    a) a science of proper animal breeding/care
    b) the absence of animal suffering
    c) increasing production obtained from animals
    d) avoiding positive emotions

2. Animal welfare has implications for:
    a) environmental protection
    b) animal hygiene
    c) public health
    d) food safety

3. The way animal welfare issues are addressed reflects:
    a) the level of civilization
    b) the reduction in the number of animals raised in industrial systems
    c) the financial resources of the population
    d) the increase in the price of animal products

4. According to the Universal Declaration on Animal Welfare, animal welfare represents:
    a) the degree to which animals' physical needs are met
    b) a branch of veterinary medicine studying the individual state of animals
    c) the individual state of the animal in relation to its attempts to adapt to its environment
    d) the degree to which behavioral and psychological needs are met

5. Protection of domestic animals:
    a) concerns protection from capture
    b) involves protection from cruelty and mistreatment
    c) involves protection from abandonment
    d) includes actions that may alter animal behavior

6. Who provided recognized definitions of animal welfare?

a) Webster (2001)

b) Broom (1980)

c) Farm Animal Welfare Council

d) World Trade Organization

7. Which of the following are fundamental “freedoms” of animals (1979)?

a) Freedom from hunger and thirst

b) Freedom to have comfortable shelter

c) Freedom to hunt freely

d) Freedom from stress

8. Freedom to express natural behavior is ensured by:

a) providing space and appropriate facilities

b) ensuring companionship of the same species

c) feeding only concentrated feed

d) ensuring optimal microclimate conditions

9. Short-term physiological indicators of welfare include:

a) heart rate and body temperature

b) adrenaline secretion

c) plasma glucose level

d) fecal corticosterone level

10. The concept of “Replacement” in research refers to:

a) repeating experiments multiple times

b) using in silico methods

c) using mathematical models

d) changing caretakers regularly

11. Visible signs of poor welfare include:

a) injuries from self-mutilation or crowding

b) expression of pain

c) deep apathy

d) increased play behavior

12. Freedom from pain, injury, and disease implies:
    a) disease prevention
    b) rapid diagnosis
    c) expensive treatments
    d) immediate euthanasia

13. Pathological indicators include:
    a) morbidity and mortality
    b) immunosuppression
    c) preference tests
    d) skin and hoof lesions

14. Hard-to-define management factors:
    a) caregiver attitude
    b) ability to detect health issues
    c) microclimate
    d) animals fear induced by staff

15. Welfare indicators in dairy cows include:
    a) hoof disease prevalence
    b) colostrum intake
    c) access to water and quality feed
    d) postpartum paralysis incidence

16. Body Condition Score includes:
    a) neck skin thickness
    b) lumbar vertebrae visibility
    c) iliac tuberosities visibility
    d) tailhead depression

17. ANI system evaluates:
    a) social behavior
    b) disease prevalence
    c) human intervention quality
    d) farm fees

18. Locomotion score 4 means:
    a) arched back standing and walking
    b) no weight bearing
    c) refusal to stand
    d) straight back

19. Non-adaptive behaviors in horses:
    a) tongue play
    b) malophagia
    c) aerophagia
    d) hitting the ground with the hooves

20. Xylophagia means:
    a) swaying
    b) circling
    c) biting of mangers
    d) gnawing of wooden surfaces

21. Causes of aerophagia:
    a) nutritional deficiencies
    b) imitation
    c) prolonged confinement
    d) stress

22. Cannibalism in pigs occurs due to:
    a) poor microclimate
    b) water deprivation
    c) claustrophobia
    d) boredom

23. Hysteria in birds:
    a) apathy
    b) feather ruffling
    c) crowding
    d) chaotic running

24. Animal needs are determined by:
    a) biological traits
    b) painful procedures
    c) environmental stimuli
    d) species and breed

25. Lab animal welfare assessment:
    a) economic reasons
    b) management records
    c) less accurate
    d) costly

26. Transport welfare includes:
    a) handling
    b) noise/light/food deprivation
    c) short duration
    d) vehicle quality

27. Behavioral indicators during transport:
    a) hormonal changes
    b) fractures
    c) vocalization
    d) fear

28. Broom system based on:
    a) motivated behaviors
    b) growth and reproduction disorders
    c) medical records
    d) aversion

29. Pre-slaughter welfare (HACCP):
    a) worker training
    b) stunning efficiency
    c) meat quality
    d) animals vocalization

30. Slaughter welfare aims:
    a) reduce suffering
    b) increase price
    c) safe food
    d) reduce abattoirs

31. According to legislation EU 98/58 CE Directive, for farm animals it will be evaluated:
    a) mutilations
    b) transport documents
    c) staffing
    d) buildings and accommodation

32. Cruelty acts include:
    a) using live animals for animal training or to control their aggression
    b) animal abuse and torture
    c) unnecessary effort
    d) misuse

33. Owners must provide:
    a) insurance
    b) shelter
    c) medical care
    d) reproduction rights

34. Mistreatment includes:
    a) early separation
    b) zoophilia
    c) unnecessary effort
    d) brutality

35. Aggressive dogs:
    a) fighting dogs
    b) police dogs
    c) that attack without provocation
    d) untrained dogs

36. Dangerous dogs:
    a) fighting breeds
    b) German Shepherds
    c) attacking dogs
    d) American Staffordshire Terrier

37. Owner requirements:
    a) love animals
    b) provide care
    c) minimum 18 years
    d) no criminal record

38. Fear effects:
    a) tonic immobility
    b) increased heart rate
    c) relaxation
    d) decreased corticosteroids

39. Adaptation phase:
    a) reversible reactions
    b) hereditary process
    c) temporary somatic changes
    d) natural selection only

40. Non-adaptive pig behaviors:
    a) cannibalism
    b) bar biting
    c) aerophagia
    d) hysteria

41. Who proposed replacing the term “welfare” with “eco-ethological-physiological harmony”?
    a) Webster
    b) Broom
    c) Coman I.
    d) Skinner

42. Which animal need is classified as “mandatory and urgent”?

a) grooming

b) bathing

c) colostrum intake

d) shearing

43. Which management factor is considered easy to define and measure?

a) caregiver attitude

b) stocking density

c) ability to detect disease

d) fear level

44. Weight loss during transport is called:

a) biocide

b) shrink (CALOU)

c) technopathy

d) ethopathy

45. "Fleeing distance" is:

a) the distance an animal travels after stunning

b) the minimum distance a human can approach without the animal trying to flee

c) the length of the loading aisle in the truck

d) the distance at which the animal begins to attack the human

46. “Hysteria” in laying hens is:

a) apathy

b) hyperactivity with chaotic running

c) feather pecking

d) tonic immobility

47. The movement of animals on foot is prohibited if the outside temperature is:

a) below +5 °C

b) below 0 °C

c) below -15 °C

d) above +25 °C

48. The maximum recommended density for chickens aged 1-30 days, housed on the floor, is:

a) 4 – 6 birds/m²

b) 8 – 10 birds/m²

c) 18 – 24 birds/m²

d) 60 birds/m²

49. The definition of "injury", as opposed to a simple scratch, assumes:

a) a superficial cut of the epidermis

b) the formation of scar granulation tissue or the occurrence of bone/joint disorders

c) the mere presence of external parasites

d) any change in skin color

50. Gait Score 3:

a) normal posture

b) arch only walking

c) arch standing and walking

d) cannot move

51. An animal with a BCS score of 5 (on body condition assessment) is considered:

a) cachectic

b) in normal condition

c) very good

d) obese

52. Xylophagia in young horses is mainly caused by:

a) extreme boredom

b) feeding with concentrated feed below 1 kg / 100 kg body weight

c) lack of access to pasture

d) excess of B vitamins

53. The main legal framework in Romania for animal protection, which defines cruelty and mistreatment, is:

a) Calimachi Code

b) Law 205/2004

c) Order 75/2005

d) Law 150/2004

54. Which of the “Five Freedoms” refers to ensuring conditions for the prevention of fear and mental suffering?

a) Freedom to have a comfortable shelter

b) Freedom from stress

c) Freedom to receive prompt diagnosis and treatment

d) Freedom to engage in natural behavior

55. Accommodation is defined as:

a) the second stage of the adaptation process, being hereditary

b) the first phase of adaptation, non-hereditary, which affects the phenotype

c) the natural process that is part of phylogenetic evolution

d) getting used to certain stimuli and gradually reducing the response to them

56. Direct measures of hunger include:

a) vocalizations and stereotypic expression

b) tests of feeding motivation and consumption rate

c) physiological laboratory measurements

d) behavioral patterns of foraging

57. Restricted feeding, judiciously applied to breeding animals, aims to:

a) generate a feeling of permanent hunger

b) increase intraspecific aggression

c) avoid obesity and the lack of correlation between sexual and somatic maturity

d) reduce personnel costs

58. The definition of pain, according to the International Association for the Study of Pain, is:

a) a short-term reaction that strongly affects

b) an unpleasant sensation and emotional experience associated with actual or potential tissue damage

c) a state of boredom caused by loneliness

d) a successful coping mechanism

59. What is Aerophagia in horses?

a) a training behavior

b) an infectious lung disease

c) refusal to leave the shelter

d) swallowing air, often accompanied by a characteristic noise

60. The ANI 35 evaluation system is based on:

a) 35 hematological indicators

b) 5 groups of factors

c) animal weight at slaughter

d) animal DNA analysis

61. What does the "Gait Score" evaluate in cows?

a) health of the acropodium (presence of pododermatitis)

b) speed of movement on pasture

c) quantity of milk produced

d) level of intelligence of the animal

62. The field walking test for broiler chickens (Dawkins) gives a score of 0 for:

a) chickens that refuse to move

b) chickens without changes in aplomb, with normal walking (minimum 10 steps)

c) chickens with burns on their legs

d) chickens with fractured wings

63. According to Law 205/2004, animal owners are obliged to provide them with:

a) adequate shelter, sufficient food and water, care and attention

b) total freedom of movement outside the property

c) daily vitaminized food supplements

d) specialized training for guarding the objectives

64. Which of the following actions is considered cruelty to animals?

a) mandatory vaccination of dogs

b) abandonment of an animal whose existence depends on human care

c) periodic grooming of the fur

d) transportation of animals in vehicles authorized by the sanitary-veterinary authority

65. The use of live animals for the training of other animals or to control their aggression is:

a) permitted for fighting dogs

b) a modern method of training

c) prohibited by law

d) permitted under the supervision of a veterinarian

66. Category I of dangerous dogs includes fighting and attack dogs, assimilated by morphological characters to the breed type:

a) German Shepherd, Rottweiler, Doberman

b) Pit Bull, Boerbull, Bandog and their crossbreeds

c) English Mastiff, Cane Corso, Argentine Dog

d) Greyhound, German Dog, Saint Bernard

67. According to Ordinance 55/2002, aggressive dog means:

a) any dog that attacks animals without reason wild

b) any dog that, without being provoked, bites or attacks people or domestic animals in public or private places

c) only dogs specially trained for guarding and protection

d) dogs that bark at passers-by through the property fence

68. According to Law 205/2004 on the protection of animals, abandonment represents:

a) abuse in the use of animals

b) causing physical and mental suffering by any means

c) leaving an animal owned and cared for by a person, in the public domain, without food, shelter and medical treatment

d) admitting animals to veterinary clinics for more than 48 hours

69. According to Ordinance 55/2002, owners of dogs considered dangerous are obliged to submit to the police headquarters a certificate attesting:

a) that the animal is fed premium food

b) carrying out anti-rabies vaccination and annual boosters

c) that the animal has participated in at least at least two dog shows

d) that the owner has attended animal psychology courses

70. The evaluation of feathering in chickens (Tauson) in the 2003 version targets:

a) a single area (tail)

b) only the color of the plumage

c) the density of external parasites

d) 6 body areas

71. The assessment of animal welfare based on management systems and practices is based on indicators related to:

a) farm investments

b) nutritional ration

c) animal behavior

d) incidence of morbidity and mortality

72. The assessment of farm animal welfare using ethological indicators refers to:
a) skin, hoof and mammary gland lesions
b) behavioral indicators of pleasure
c) animal ability to perform
d) zootechnical and veterinary management

73. Prof. Decun classifies animal welfare as:
a) full, poor and very poor
b) poor and optimal
c) physical and psychological
d) satisfactory, unsatisfactory and insufficient

74. Animal habituation represents:
a) prolonged reaction following interaction with stimuli
b) a type of learning by imitation
c) a type of learning by play
d) habituation to certain stimuli and gradual reduction of the response to them

75. Restricted feeding of animals can be associated with:
a) poor welfare
b) full welfare
c) a method of raising animal production
d) the species and breed of the animal

76. The indicator for the global assessment of the microclimate is:
a) the temperature/relative humidity ratio
b) the NH3 level
c) ventilation and air currents
d) brightness

77. The body hygiene index monitors:
a) the head area
b) the dorsal region
c) the flank area and the upper part of the limbs
d) the pectoral region

78. The protection of domestic animals refers to:

a) their protection against acts of cruelty, mistreatment and abandonment

b) unjustified killing

c) actions that may lead to the extinction of some species

d) the provision of food ad libitum

79. The organization of fights between or with animals is considered:

a) cultural tradition

b) minor offense

c) crime

d) legalized sport

80. Animal welfare evaluation indicators:

a) are uniform at the European Union level

b) are independent of "Animal Freedom"

c) there is no official standardization

d) are included exclusively in digitalization programs for animal farms

EPIDEMIOLOGY

1. In a cattle farm, over the last month, 20 new cases of an infectious disease occurred out of a total of 200 animals at risk. What is the cumulative incidence of the disease during this month?
a. 10%
b. 20%
c. 5%
d. 0.1%

2. In a swine farm outbreak of a transmissible disease, the basic reproduction number (R_0) was calculated to be 3. What does this indicator mean?
a. the epidemic will die out on its own
b. each infected case produces on average 3 new cases in a completely susceptible population
c. the disease is not transmissible between animals
d. disease incidence is decreasing

3. When assessing the health status of a sheep flock at a given time, for example through a cross-sectional study, we measure the total number of sick animals (both old and new) divided by the total flock size. What is this indicator called?
a. incidence
b. prevalence
c. mortality
d. absolute risk

4. A diagnostic test used for screening a viral disease in cattle has 100% sensitivity. What does this mean?
a. the test produces no false positives
b. the test produces no false negatives
c. the test has very high specificity
d. positive predictive value (PPV) is maximal

5. The specificity of a serological test for bovine brucellosis refers to the ability of the test to:
a. correctly detect diseased animals
b. correctly detect healthy animals
c. measure disease incidence in the herd
d. estimate disease-caused mortality

6. On a goat farm, 30 animals are tested for a disease. Among them, 10 are truly diseased (confirmed by the reference test). The rapid test identifies 8 of the 10 diseased animals. What is the sensitivity of the test?
a. 80%
b. 60%
c. 75%
d. 90%

7. A disease has a very low prevalence in a population (e.g., less than 1%). How does the positive predictive value (PPV) of a diagnostic test change in this situation compared to a high-prevalence setting?
a. PPV increases
b. PPV decreases
c. PPV remains constant regardless of prevalence
d. PPV becomes 100%

8. In a cohort study conducted on a pig farm, a relative risk (RR) of 2 was calculated for the occurrence of a respiratory disease in animals exposed to a certain risk factor compared to unexposed animals. How do you interpret this value?
a. there is no association between factor and disease
b. the risk of disease is twice as high in exposed animals compared to unexposed ones
c. the risk of disease is low in exposed animals
d. there is an inverse relationship between factor and disease

9. In a case-control study of a listeriosis outbreak in sheep, an odds ratio (OR) of 1 was obtained. What conclusion do you draw?
a. the risk of disease is increased among exposed individuals
b. the risk of disease is decreased among exposed individuals
c. there is no statistical association between the studied risk factor and the disease
d. the observed relationship is causal

10. Following a foodborne toxic infection that occurred after an animal fair, the epidemic curve shows a single sharp peak followed by a rapid decline. What type of outbreak is most likely?
a. slowly increasing, long-term outbreak
b. outbreak with cases dispersed over time
c. point-source outbreak
d. propagated outbreak through direct contact

11. In an outbreak of classical swine fever, the epidemic curve shows several successive peaks at intervals of approximately one incubation period. What does this pattern indicate?
a. a single common source of infection
b. transmission by contact between animals
c. lack of disease transmission
d. a chronic disease with long evolution

12. On a broiler farm, the introduction of a batch infected with a viral disease leads, after a few days, to new cases in neighbouring batches, and then cases spread in a chain from one group to another. What is this type of outbreak called?
a. common-source outbreak
b. propagated outbreak
c. endemic state
d. sporadic case

13. An infectious disease in cattle has a high case fatality rate (over 80%) but low incidence (less than 1 case per 100,000 animals per year). What disease characteristic does this situation suggest?
a. it is a severe but rare disease
b. it is a mild, frequent disease
c. disease prevalence is high
d. disease transmission is intense

14. In the management of a foot-and-mouth disease outbreak in cattle, after applying quarantine and ring vaccination measures, the effective basic reproduction number (R_o) is estimated to have fallen below 1. What is the immediate consequence for the outbreak?
a. the epidemic will accelerate
b. the disease will become endemic in the area
c. the outbreak will progressively die out
d. incidence will increase significantly

15. Vaccinating 70% of the animals in a herd against a transmissible disease significantly reduces transmission, even if the remaining 30% are not vaccinated. What is the main mechanism?
a. vaccination increases disease incidence in unvaccinated animals
b. vaccination reduces the herd's natural immunity
c. herd immunity is created
d. vaccination increases mortality in infected animals

16. In veterinary epidemiology, the term "cumulative incidence" refers to:
a. the total number of existing cases at a given time
b. the proportion of new cases in an exposed population over a defined period
c. the rate of deaths caused by disease
d. disease prevalence at the beginning of the period

17. The formula for calculating the case fatality rate in an outbreak is:
a. total number of cases / total population
b. number of deaths / total number of disease cases
c. number of new cases in one month
d. relative risk of the disease

18. Constructing an epidemic curve (graph of number of cases over time) is primarily useful for:
a. establishing individual treatment of animals
b. identifying the type of outbreak
c. planning routine vaccination campaigns
d. clinical diagnosis of the first case

19. An epidemiological study that selects animals only from a high-performance farm, neglecting small and extensive farms, may suffer from a bias called:
a. measurement bias
b. selection bias
c. statistical analysis bias
d. invalid diagnostic test bias

20. In epidemiology, the concept of "confounding" occurs when a factor:
a. introduces random errors in measurements
b. is associated with both the exposure and the disease, and can distort the relationship between them
c. is a selection bias
d. is a laboratory error

21. For studying rare diseases in animals (e.g., a neurodegenerative disease occurring in 1 out of 100,000 cattle), the most efficient epidemiological design is:
a. cross-sectional study
b. case-control study
c. screening study
d. diagnostic test study

22. A cohort study in veterinary epidemiology:
a. is necessarily retrospective
b. measures disease incidence in exposed and unexposed animals and allows calculation of relative risk
c. cannot estimate disease risk
d. does not allow assessment of causal relationships

23. A cross-sectional study conducted in a slaughterhouse to evaluate the prevalence of lung lesions in pigs will measure:
a. incidence of lesions
b. prevalence of lesions at the time of examination
c. mortality caused by lesions
d. basic reproduction number (R_o)

24. The positive predictive value (PPV) of a diagnostic test depends on the following parameters:
a. only on sensitivity
b. only on prevalence
c. only on specificity
d. on sensitivity, specificity, and prevalence

25. The ROC (Receiver Operating Characteristic) curve is used to evaluate:
a. disease incidence over time
b. performance of a diagnostic test
c. age-specific mortality
d. population attributable risk

26. A test with very high sensitivity (e.g., 99.9%) is most suitable for:
a. screening a disease in an apparently healthy population (to avoid missing any cases)
b. confirming a diagnosis after a positive test
c. final diagnosis of a rare disease
d. complete elimination of a disease from a country

27. A test with very high specificity (e.g., 99.9%) is most suitable for:
a. mass screening
b. confirming a diagnosis
c. primary prevention
d. calculating incidence

28. Zoonoses are defined as:
a. diseases that affect only animals
b. diseases or infections naturally transmissible between vertebrate animals and humans
c. chronic, non-communicable diseases
d. hereditary genetic diseases

29. The epidemiological chain of an infectious disease includes the following essential links:
a. susceptible host
b. pathogenic agent
c. transmission environment
d. all of the above

30. Vertical transmission of a pathogen from mother to offspring can occur:
a. by airborne route
b. transplacentally or through milk
c. indirectly, through contaminated objects
d. by vectors (mosquitoes, ticks)

31. A biological vector (e.g., the tick in bovine babesiosis) is characterized by the fact that:
a. it passively carries the pathogen without multiplication
b. it allows multiplication or development of the pathogen inside itself
c. it is represented exclusively by water or air
d. it plays no role in the agent's cycle

32. A disease is considered endemic in a given geographic area when:
a. it occurs constantly at an expected frequency
b. it occurs only sporadically at irregular intervals
c. it produces a large-scale epidemic
d. it spreads globally

33. A pandemic represents:
a. an epidemic limited to a locality
b. an epidemic with global spread, affecting multiple continents
c. a usual seasonal increase in cases
d. the occurrence of sporadic, isolated cases

34. Herd immunity in a population depends on:
a. the basic reproduction number (R_o) of the disease
b. the proportion of vaccinated or naturally immune animals
c. animal density and contacts
d. all of the above

35. Active epidemiological surveillance differs from passive surveillance in that:
a. it relies on spontaneous reporting of cases by veterinarians
b. it involves systematic and proactive searching for cases in the population (e.g., field surveys, periodic testing)
c. it is limited to analysis of existing data
d. it does not include treatment of animals

36. Population screening in animal health has as its main objective:
a. establishing a definite clinical diagnosis
b. early detection of disease in apparently healthy animals
c. individual treatment of sick animals
d. global eradication of the disease

37. The term "eradication" of a disease means:
a. reducing incidence to a very low level
b. complete and permanent elimination of the pathogen at the global level
c. temporary control of an outbreak
d. preventing the occurrence of sporadic cases

38. Control of a transmissible disease in a veterinary context aims to:
a. totally eliminate the pathogen from all countries
b. reduce the incidence, prevalence, and consequences of the disease to an acceptable level
c. only compulsory vaccination of all animals
d. only mass diagnostic testing

39. An example of preventing the occurrence of a disease in a healthy herd is:
a. treating sick animals with antibiotics
b. prophylactic vaccination of the herd
c. early diagnosis through screening
d. prognosis evaluation in sick animals

40. Measures aimed at early detection of disease in a herd include:
a. population screening
b. vaccination before exposure
c. global eradication of the agent
d. treatment of chronic complications

41. Which of the following epidemiological indicators are used to describe the frequency and impact of diseases in animal herds?
a. incidence
b. prevalence
c. mortality rate
d. environmental temperature

42. Intrinsic host factors that influence susceptibility to diseases include:
a. age
b. sex
c. immune status (natural or acquired immunity)
d. air temperature in the shelter

43. Environmental factors that can modulate the occurrence and spread of diseases on farms are:
a. climate (temperature, humidity, precipitation)
b. animal density in housing
c. quality of nutrition and water
d. presence of pathogenic bacteria

44. In veterinary epidemiology, the main types of bias that can affect the validity of a study are:
a. selection bias
b. information (measurement) bias
c. confounding
d. treatment bias

45. An ideal diagnostic test for an infectious disease in animals should have the following characteristics:
a. high sensitivity
b. high specificity
c. good reproducibility
d. low cost and ease of use

46. The classic analytical epidemiological studies used for testing hypotheses of causal association include:
a. cohort study
b. case-control study
c. descriptive cross-sectional study
d. experimental study (e.g., controlled clinical trial)

47. Descriptive epidemiological studies (which describe the frequency and distribution of disease) include:
a. cross-sectional study
b. case series
c. cohort study
d. case report (individual case)

48. Parameters that characterise the performance of a diagnostic test are:
a. sensitivity
b. specificity
c. positive predictive value (PPV)
d. disease prevalence

49. The positive predictive value (PPV) of a diagnostic test depends on:
a. prevalence of disease in the tested population
b. specificity of the test
c. sensitivity of the test
d. hazard (instantaneous risk)

50. The negative predictive value (NPV) of a diagnostic test depends on:
a. prevalence of disease
b. sensitivity of the test
c. specificity of the test
d. relative risk

51. The epidemiological chain of a transmissible disease includes:
a. etiological agent
b. susceptible host
c. environment (route of transmission)
d. specific treatment

52. Indirect transmission of pathogens can occur through:
a. direct contact between animals
b. contaminated water
c. fomites, equipment, clothing
d. airborne route, with suspended particles

53. Biological vectors (e.g., ticks, mosquitoes) are characterised by:
a. they passively carry the pathogen without modifications
b. they allow multiplication or development of the pathogen inside themselves
c. they are essential in the transmission cycle of the agent
d. they are only mechanical vectors, without biological role

54. Examples of zoonotic diseases (transmissible from animals to humans) are:
a. rabies
b. brucellosis
c. diabetes mellitus (not a zoonosis)
d. leptospirosis

55. Herd immunity depends on:
a. the basic reproduction number (R_o) of the disease
b. the mortality rate caused by the disease
c. the proportion of immune individuals (through vaccination or natural disease) in the herd
d. the structure of contacts between animals

56. If the basic reproduction number (R_o) in a population is greater than 1, then:
a. the disease will spread and an epidemic may occur
b. the disease will disappear spontaneously
c. an epidemic may occur if there are enough susceptible individuals
d. there is no disease transmission

57. Population screening in animal health is characterised by:
a. early detection of disease in apparently healthy animals
b. use of a test with high sensitivity
c. the need for mandatory maximal specificity
d. wide-scale application in the population, not only in suspect animals

58. Epidemiological surveillance includes the following activities:
a. systematic collection of disease data
b. analysis and interpretation of collected data
c. dissemination of information to decision-makers
d. individual treatment of each sick animal

59. Outbreak control measures on a farm may include:
a. isolation of sick animals
b. quarantine for exposed but not yet sick animals
c. emergency vaccination around the outbreak
d. elimination of the infection source (e.g., sanitary culling)

60. General sanitary measures for disease prevention on farms include:
a. disinfection of shelters and equipment
b. insect control
c. rodent control
d. genetic treatment of animals

61. Global eradication of a disease involves:
a. only reducing incidence to a low level
b. complete and permanent elimination of the pathogen from all countries
c. elimination of the pathogen from all natural hosts
d. temporary control without definitive elimination

62. A cohort study in veterinary epidemiology:
a. follows over time a group of animals exposed and a group unexposed to a factor
b. calculates disease incidence in exposed and unexposed animals
c. can only be retrospective
d. allows estimation of relative risk (RR)

63. A case-control study:
a. selects animals based on exposure
b. selects cases (diseased) and controls
c. uses odds ratio (OR) as a measure of association
d. directly calculates incidence

64. Confounding occurs when:
a. the factor is associated with the exposure under study
b. the factor is associated with the disease (independently of exposure)
c. the factor lies on the causal pathway between exposure and disease (this is a mediator, not a confounder)
d. it distorts the apparent relationship between exposure and disease

65. The epidemic curve provides information about:
a. the type of outbreak (common source, propagated, etc.)
b. the incubation period (through the interval between exposure and peak)
c. the dynamics of case occurrence over time
d. specific treatment of the disease

66. A propagated epidemic (through person-to-person or animal-to-animal transmission) is characterised by:
a. a single sharp peak
b. several successive peaks at intervals of the incubation period
c. transmission from one animal to another (in a chain)
d. single source, simultaneous exposure

67. A common-source (point-source) outbreak is characterised by:
a. simultaneous exposure of several animals to the same source
b. cases occurring in successive waves
c. a single peak on the epidemic curve
d. continuous transmission over a long period

68. The prevalence of a disease in a herd is directly determined by:
a. incidence (number of new cases)
b. average duration of the disease
c. disease-specific mortality
d. treatment applied to cases

69. Cumulative incidence of a disease is influenced by:
a. number of new cases over a period
b. size of the population at risk at the beginning of the period
c. duration of the disease
d. mortality rate

70. The case fatality rate (mortality) caused by a disease can be influenced by:
a. virulence of the pathogen strain
b. access to treatment and quality of veterinary care
c. sensitivity of the diagnostic test (does not influence actual mortality)
d. farm management (housing conditions, nutrition)

71. The ROC (Receiver Operating Characteristic) curve is useful for:
a. comparing sensitivity and specificity of a test at different thresholds
b. evaluating the overall performance of a diagnostic test
c. determining disease prevalence
d. helping to choose the optimal positivity threshold

72. Tests used for mass screening of herds should be:
a. sensitive
b. inexpensive
c. rapid
d. highly specific

73. Tests used for confirming a diagnosis (e.g., Western blot) are characterised by:
a. high specificity, to reduce false-positive results
b. wide-scale application for population screening
c. high precision (reproducibility of results)
d. very short execution time as the main selection criterion

74. Risk factors for the occurrence of diseases on farms may include:
a. quality of nutrition
b. management practices (cleanliness, biosecurity)
c. genetic susceptibility of the breed
d. treatment administered after disease

75. Risk analysis in animal health includes the following components:
a. hazard identification
b. risk assessment
c. risk management
d. risk communication

76. Spatial (geographic) epidemiology analyses:
a. geographic distribution of disease cases
b. formation of spatial clusters (aggregations of cases)
c. disease evolution over time
d. individual treatment of animals

77. Geographic Information Systems (GIS) are used in veterinary epidemiology for:
a. mapping cases and risk factors
b. spatial analysis (distances, neighbourhoods)
c. real-time surveillance of outbreaks
d. individual clinical diagnosis

78. The "One Health" concept involves the integration of the following domains:
a. animal health
b. human health
c. environmental health
d. strict isolation of medical disciplines

79. Which of the following measures contribute to preventing the spread of infectious diseases in an animal herd?
a. vaccination of animals
b. isolation of sick animals
c. compliance with biosecurity measures
d. increasing animal density in housing

80. Biological vectors (e.g., the tick in anaplasmosis) are characterised by:
a. they are essential in the transmission cycle of the pathogen
b. they allow multiplication or development of the agent inside themselves
c. they transmit the agent mechanically, without multiplication
d. they do not modify the pathogen

HYGIENE, TECHNOLOGY AND FOOD SAFETY

1. Microbiological analyses of water used in meat processing have the following objectives:

a) The presence of Salmonella and Campylobacter is determined as standard indicators of drinking water

b) The presence of hepatitis viruses is assessed

c) Indicators such as coliforms, Escherichia coli, and enterococci are determined

d) Microbiological analyses of water are performed only when the unit is commissioned

2. Pest control is important activity in meat processing units. Which of the following statements are correct?

a) Waste must be collected in impermeable, identifiable containers fitted with lids

b) Windows that open must have insect protection screens with mesh openings of a maximum of 10 mm

c) Pest-control baits are prohibited in waste storage areas

d) Pest control can only be performed by competent veterinary authorities

3. During the monthly water analysis, unsatisfactory microbiological results are obtained right at the entry of water into the processing unit. Which of the following measures are correct?

a) The chlorine dose is increased and the water use continues

b) The water supply from the affected source must be stopped until the problem is resolved

c) Before resuming use, tests must be performed to confirm water quality

d) The resulting products are heat-treated, because the treatment will eliminate the contamination

4. During the sanitization of a processing section, an employee proposes using reusable sponges and a high-pressure water jet to speed up the work. Which of the following decisions are correct?

a) Mechanical cleaning should be avoided in wet areas because it has reduced efficiency

b) In the mechanical cleaning stage, the use of water jet is not recommended because it can spread impurities

c) The use of reusable sponges and cloths is not permitted because they can become sources of contamination

d) Sponges are preferred in wet processing areas because they absorb contaminants

5. On a fixed inclined surface, the detergent solution drains too quickly and the contact time is not achieved. What solutions are applicable?

a) Since the contact time cannot be achieved, this stage is eliminated and the next one is extended

b) A gel-formulated detergent can be used to extend the contact time

c) More concentrated detergent solutions can be used, allowing the contact time to be reduced

d) To compensate, potable water can be replaced with a diluted detergent solution

6. Which of the following statements regarding the temperature requirements laid down in Regulations (EC) No 852/2004 and No 853/2004 are correct?

a) For refrigerated minced meat, the distribution temperature can be a maximum of 4°C

b) For offal, the maximum permitted temperature is 7°C

c) For offal, the maximum allowed temperature is 3°C

d) For fresh meat of domestic ungulates, the maximum permitted temperature 7°C

7. Which of the following statements regarding personnel hygiene are correct?

a) The personal hygiene rules are less strict if HACCP has been implemented in the unit

b) Personnel and visitors represent a potential source of biological and physical hazards

c) The personal hygiene rules apply primarily to permanent employees, while visitors are subject to fewer requirements

d) Visitors do not represent a major risk if they spend only a short time in the unit

8. In a cutting room, the air temperature is 11°C, but the meat pieces remain in the room for too long and their temperature reaches 9°C. What measures can be applied?

a) Cutting can continue if the product will subsequently heat-treated by the consumer

b) It is recommended to keep the meat at sub-zero temperatures after cutting

c) The meat must enter the cutting room at a temperature below 7°C

d) The meat must be processed quickly

9. A worker passes from the dirty area to the clean area to temporarily help with packaging. What must the worker do?

a) Wear the same equipment to save time, but should not touch the edible products

b) He doesn’t need to do anything additional, if he has not touched non-edible products

c) Pass through a hygiene transition area (filter) and wash his hands and footwear

d) Change his protective equipment

10. A worker leaves the toilet and returns to the work area wearing the same clean gloves. Which of the following statements are correct?

a) Hand washing is required even if gloves are worn

b) Drying the hands with a hot air dryer can replace hand washing

c) Gloves can replace hand washing when the worker is allergic to the hand-washing product

d) Hand washing and disinfection are mandatory after each visit to the toilet, before returning to the work area

11. A source of chlorinated water used in meat processing is being evaluated, but the samples are collected in ordinary sterile containers. Is this correct?

a) Yes, since chlorine does not influence the results of microbiological analyses

b) Yes, because chlorinated water is not subject to microbiological analysis

c) No, the sampling container must contain sodium thiosulfate

d) No, because chlorinated water samples must be collected only in metal containers

12. Which of the following statements regarding the sanitization of knives are correct:

a) Sanitization of knives used in the cutting section is performed by immersing the metal blades in water at 82°C

b) The temperature of the sanitization water can be lower than 82°C if the blade appears clean

c) Disinfection of the knives can be done daily, together with the general sanitization of the equipment,at the end of the working day

d) The knives are left on the work table at the end of the shift for sanitization

13. An operator allows employees to wash their protective equipment at home in order to reduce costs. Is this correct?

a) No, because the washing of the protective equipment must be done by the operator

b) Yes, if the equipment is used only in low-risk areas

c) Yes, because the operator's control of equipment washing is not an obligation

d) No, because the washing conditions must be controlled

14. In a meat processing unit there is a microbiology laboratory. What does the legislation require?

a) The laboratory must have a separate water source

b) The microbiology laboratory must be physically separated from the production areas

c) The plant cannot have a microbiology laboratory in the same location as the production areas

d) The laboratory must have adequate ventilation, so that there is no risk of contamination of the production areas

15. A processing line uses equipment that contains aluminum parts that come into contact with the products. Which of the following statements are correct?

a) Aluminum is specifically recommended for use in acidic environments

b) Aluminum is not used for surfaces that come into contact with acidic foods

c) Aluminum is more resistant than titanium in acidic environments

d) Aluminum surfaces must not be sanitized with strong oxidizing agents

16. In a processing area with a high risk of contamination, mechanical ventilation is necessary. What conditions must be met?

a) Air filtration is optional in high-risk areas

b) The air introduced into these areas must be filtered

c) The air pressure in high-risk spaces must be lower than in the adjacent areas

d) The relative humidity of the air must be high to reduce the growth of microorganisms

17. To ensure satisfactory results a detergent solution must meet the following conditions:

a) The concentration of solution

b) The temperature of the surface

c) The type of soil that has to be removed

d) The duration of cleaning

18. If the prerinsing water is too hot:

a) Milk residues will dry and stick to the surfaces

b) The proteins coagulates

c) The surfaces become easy to clean

d) The detergent is inactivated

19 The disinfection has the role:

a) To clean the surfaces

b) To kill bacteria

c) To sterilize the machines in dairy plants

d) To remove the soil

20. Dairy equipment can be disinfected in the following ways:

a) Chemical disinfection

b) Physical cleaning

c) Thermal disinfection

d) All three

21. The duration of hand washing process for food workers is:

a) At least 15 seconds

b) 1 minute

c) 15 to 30 seconds

d) 10 seconds

22. To ensure satisfactory results a detergent solution must meet the following conditions:

a) To work fast

b) The temperature of solution

c) The type of soil that has to be removed

d) The mechanical effect on the cleaned surfaces

23. The CIP program for a pasteurizer uses:

a) Circulation of alkaline detergent solution for 30 min at 75°

b) Circulation of (nitric) acid solution for about 20 minutes at70°C

c) Circulation of an alkaline detergent solution for 30 min at 65°

d) Circulation of (nitric) acid solution for about 20 minutes at 65°C.

24. CIP system:

a) Is a close sanitation system which permit the tanks and machines sanitation without dismantled

b) Allows to perform the sanitation in open spaces

c) Works with alkaline and acid solutions and high velocity

d) Allows to perform the sanitation in dairy processing spaces

25. For an effective CIP system, the following conditions must be respected:

a) All surfaces must be accessible to the detergent solution

b) No dead ends which the detergent cannot reach or through which it cannot flow

c) To work with low pressure

d) To work with low velocity and respect the time contact

26. Recovery of product residues, during the sanitation procedures is important for:

a) To destroy the bacteria

b) To facilitate cleaning

c) To remove the milk deposit

d) To minimise product losses

27. Physical cleanliness means:

a) To remove the bacteria from surfaces

b) To remove all visible dirt from surfaces

c) To clean the equipments by CIP system

d) To do disinfection

28. The alkaline detergent temperature during cleaning is:

a) 65ºC

b) 68-70ºC

c) At least 70ºC

d) 80ºC

29. The acid detergent temperature during cleaning is:

a) 65ºC

b) 68-70ºC

c) At least 70ºC

d) 80ºC

30. Prerinsing water during the sanitation procedures has:

a) At least 55°C

b) Not exceed 55°C

c) at least 70°C

d) 60-70°C

31. The wetting agent (surfactant) has the role to:

a) Remove bacteria from surfaces

b) To obtain a good contact between the alkaline detergent and film of dirt

c) To prepare the surfaces for detergent action

d) To remove the dirt film from surfaces

32. The optimum temperature for hand washing is:

a) 35°C

b) 35-40°C

c) 43-49°C

d) 40-43°C

33. Milk temperature requirement during the transportation is:

a) 10-15ºC

b) <5 ºC

c) 5-10ºC

d) 8°C

34. HTST pasteurization is made:

a) At 63-65ºC for 30 min.

b) At 72-75ºC for 12-15 sec.

c) At 120ºC for 20 sec.

d) At 130ºC for 3 sec.

35. ESL (extended shelf life) milk is stored at:

a) 15-20ºC

b) < 7ºC

c) 10ºC

d) <10°C

36. Milk UHT treatment is made:

a) 100ºC for 10 min.

b) 135-140ºC 2-3 sec.

c) 115 ºC 15 min.

d) 90-95°C 2 sec.

37. The microfiltration of milk has the role to:

a) Improve the milk stability

b) To produce partial demineralization

c) Increase the protein and fat content in milk

d) To reduce the number of microorganisms in milk

38. Efficiency of cream pasteurization is checked by:

a) The catalase test

b) The phosphatase test

c) The peroxidase test

d) Amilase test

39. Milk UP treatment is made:

a) 100ºC for 10 min.

b) 135-140ºC 2-3 sec.

c) 115 ºC 15 min.

d) 125-138 2-4 sec.

40. After thermalisation, the milk can be stored in dairy plants for:

a) One week at 2-4°C

b) 3-4 days at 6-7°C

c) 1 day at 2-4°C

d) 5 days at 10°C

41. As the effects of homogenization in milk:

a) The microorganisms are destroyed

b) The fat globules are destroyed

c) The viscosity of the milk increase

d) The viscosity of milk decrease

42. After 4-5 days of storage, the following bacteria can grow in milk :

a) Coliforms

b) Clostridium spp.

c) Psychrotrophs

d) The spors

43. In dairy industry, centrifugation has the role to:

a) Separate the milk in cream and skimm milk

b) Coagulate the milk

c) To eliminate bacterial spores

d) To destroy the microorganism

44. In dairy industry, standardization has the role to:

a) Increase the fat content

b) Decrease the fat content

c) Increase the lactose content

d) Decrease the minerals content

45. Milk thermisation is made:

a) To destroy pathogens

b) To inhibit psychrotrophs

c) At 63 - 65ºC for 15 sec.

d) At 63 - 65ºC for 30 min.

46. Milk pasteurization is made to:

a) Destroy the vegetative form of bacteria

b) Destroy the milk enzymes

c) Destroy the spores of bacteria

d) Change sensorial properties in milk

47. It is true:

a) Bacterial proteases and lipases are more resistant to heat-treatment compared with milk enzymes

b) All spores are destroyed by milk sterilization

c) Spores and the vegetative form of thermodures bacteria can survive pasteurization

d) The vitamins content is reduced by heat- treatment

48. In dairy industry, bactofugation is applied to:

a) Coagulate the milk

b) Clean the milk

c) Separate the milk in cream and skimm milk

d) To eliminate bacterial spores

49. The following statements about the sterilization of canned meat products are correct:

a) After sterilization, the containers are sealed hermetically to prevent recontamination

b) Sterilization consists of the heat treatment of products at temperatures higher than 100°C

c) Sterilization of meat products must ensure the inactivation of Clostridium botulinum spores

d) Commercially sterilized canned meat products must be stored at refrigeration temperature

50. The following statements about the influence of product structure on sterilization are correct:

a) Canned meat products with a higher proportion of liquid sterilize more quickly because heat transfer through convection increases

b) Agitation of the containers is useful only when heat transfer occurs by conduction

c) The size of the container is not important if the sterilization temperature is high enough

d) In compact, homogeneous products, heat is transmitted mainly by conduction

51. The selection of the reference microorganism for calculating the heat treatment formula takes into consideration:

a) Clostridium botulinum is chosen as the reference microorganism because its vegetative form is heat-resistant

b) For meat preserves with pH > 4.5, the resistance of Clostridium botulinum spores is considered

c) For all sterilized meat products, L. monocytogenes is used as the reference microorganism

d) The selection of the reference microorganism considers the enzymatic equipment of the microorganism

52. The following statements about the sterilization of meat products are correct:

a) The "cold point" of a preserve is the point where the microbial spoilage process starts

b) Commercial sterility means the complete absence of any form of microbial life

c) The evaluation of the sterilization process is performed by monitoring the temperature at the "cold point" of the product

d) The "cold point" of a meat preserve is always near the packaging material

53. In meat canned meat products, the "cold point" is located as follows:

a) The location of the cold point is determined by estimation, based on the assessor's experience

b) In products with a solid texture, the cold point is located at the geometric center of the product

c) In all products, the cold point is located at the geometric center, regardless of consistency

d) In products with a liquid texture, the cold point is located centrally, but at one-third of the height of the can

54. What does the D value used to calculate food heat treatment formulas represent?

a) A parameter of the microorganism's resistance to temperature

b) The time needed to reduce the microbial population by 90% at a certain temperature

c) The time needed to cool the sterilized product to 35-40°C

d) The total number of bacteria that survive sterilization

55. The following statements regarding the z value (thermal destruction curve) are correct:

a) A low z value indicates lower sensitivity of the microorganism to temperature variations

b) A high z value indicates that the microorganism is less sensitive to temperature fluctuations

c) The z value indicates the time needed to destroy a reference microorganism

d) Vegetative forms generally have higher z values than bacterial spores

56. The sterilization parameters for canned meat products are determined by taking into account:

a) The initial microbial load of the contents

b) The characteristics of the protective lacquer layer applied to the interior of the container

c) The mode of heat transfer in the product

d) The characteristics of the container's double seam

57. The microbial destruction model during heat treatment can be described as follows:

a) The microbial destruction model is the same regardless of the temperature and duration of the heat treatment

b) Microorganisms are killed instantly once the target temperature is reached

c) Microorganism destruction follows a logarithmic model of population decline

d) Microorganism destruction occurs linearly, with the same absolute number of cells eliminated per second

58. For Clostridium botulinum spores, if D_{121}°C = 0.21 minutes, which of the following statements are correct?

a) A population of 1000 spores is reduced to approximately 10 spores in 0.42 minutes at 121°C

b) A population of 1000 spores is reduced to 100 spores in 0.21 minutes at 121°C

c) In 0.21 minutes, the population is reduced by only 10%

d) In 0.21 minutes, all 1000 spores are destroyed

59. For Clostridium botulinum spores, if D_{121}°C = 0.21 minutes and z = 10°C, which of the following statements are correct?

a) At 111°C, the D value = 0.021 minutes

b) At 131°C, the D value = 2.1 minutes

c) At 131°C, the D value = 0.021 minutes

d) At 111°C, the D value = 2.1 minutes

60. Nitrites added to heat-treated meat products produce the following effects:

a) They improve the meat texture by gelling the muscle proteins

b) They contribute to the formation of stable pinkish-red pigments after heat treatment

c) They transform myoglobin into metmyoglobin

d) Nitrites change the chemical state of myoglobin, favoring the formation of nitrosomyoglobin

61. The following statements about the flavor of heat-treated meat are correct:

a) The flavor of meat heat-treated in a dry environment is more intense than that of heat-treated meat in a moist environment

b) Maillard-type reactions contribute to the formation of the flavor of heat-treated meat

c) The presence of water in the environment intensifies Maillard-type reactions

d) The high fat content of the meat reduces the intensity of the flavor

62. Which of the following statements regarding the tenderness and juiciness of meat are correct?

a) Meat with a low collagen content always becomes more tender between 60-80°C

b) Juiciness increases more during baking than during frying

c) Juiciness is independent of the heat treatment method

d) Through slow heating to about 80°C, tenderness can increase as collagen is transformed into gelatin

63. Heat treatment of meat causes weight losses. Which of the following statements are correct?

a) Weight loss increases linearly with the duration of heat treatment

b) Weight loss is mainly caused by the loss of water and lipids

c) Treatment at moderate temperatures produces greater weight losses than treatment at high temperatures

d) Weight loss is not influenced by the proportion of connective tissue in the meat

64. The following statements regarding the effects of heat treatment of meat are correct:

a) Fungal spores show greater heat resistance than bacterial spores

b) Moderate heat treatments reduce the bacterial population but do not sterilize meat

c) Moderately heat-treated products require additional measures, such as refrigeration and adequate packaging

d) Bacterial spores are completely destroyed by heat treatment of meat

65. The hazard analysis within the HACCP system focuses on:

a) Physical hazards

b) Organoleptic hazards

c) Chemical hazards

d) Biological hazards

66. When evaluating the hazards identified through HACCP hazard analysis, the following should be taken into consideration:

a) The frequency/probability with which the identified hazards may occur

b) The cost of hazard prevention measures

c) The severity of the negative effect exerted by the hazard on consumer health

d) The number of targeted consumers

67. Corrective measures within the HACCP system have the following objectives:

a) Restoring control at the CCP

b) Determining the destination of the potentially hazardous product

c) Revising control limits to make them appropriate for the monitored process

d) Sanctioning the personnel responsible for the deviation

68. In HACCP system, a stage of a technological process at which essential control can be applied for the elimination or reduction to acceptable levels of a hazard identified through hazard analysis is:

a) A control measure

b) A critical control point

c) A control point

d) A HACCP stage

69. The critical control points specified within the HACCP system are:

a) Stages of the production process at which the risk of product contamination is high

b) Stages of the technological process where hazards can be controlled

c) Stages of the technological process at which a hazard may manifest

d) Stages that must be mentioned in the applicable food safety legislation

70. The purpose of implementing a HACCP system in the food industry is:

a) Ensuring the safety of food products

b) Streamlining the technological process

c) Ensuring the external traceability of products along the food chain

d) Avoiding quality problems associated with a food product

71. In the HACCP system, the hazards identified by hazard analysis must be:

a) Controlled at critical control points level

b) Carefully monitored

c) Eliminated from the final product

d) Communicated to the consumer through specific labeling

72. In order for a hazard to be taken into consideration within the HACCP plan, it must:

a) Be considered significant following the hazard analysis

b) Be associated with the processing environment

c) Be controllable through appropriate measures

d) Cause obvious organoleptic changes

73. What should be done when a CCP cannot be established for one or more identified significant hazards?

a) The manufacturing technology or product composition must be modified in order to establish a CCP

b) The hazard is transferred to a subsequent stage in the food chain, without validating the measure

c) Manufacturing the product in the evaluated form must be abandoned

d) All process stages are transformed into CCPs

74. Which of the statements below correctly describe monitoring in the HACCP context?

a) It is a planned sequence of observations or measurements

b) The frequency of monitoring does not influence the efficiency of CCP control

c) It is used to determine whether a CCP is under control

d) It is applied only after a deviation occurs

75. The person responsible for monitoring a CCP must:

a) Be trained

b) Assume responsibility for the observed deviations

c) Understand the consequences of failure to comply with a critical limit

d) Decide whether a corrective measure needs to be applied

76. The following statements correctly describe deviations and their relationship with corrective measures:

a) Failure to meet a critical limit is called a deviation

b) When a deviation occurs, corrective measures must be applied

c) Deviation is a concept used exclusively in auditing

d) Deviation is characteristic of an inefficient HACCP plan

77. Which of the following statements are correct regarding verification and validation?

a) Verification procedures are necessary to ensure that the HACCP system is functioning correctly

b) Verification is the exclusive responsibility of the sanitary-veterinary authorities

c) Validation precedes implementation and demonstrates the capacity of the control measure to control the hazard

d) Validation is based on the results of CCP monitoring

78. In a ready-to-eat product, the HACCP team identifies Salmonella as a significant hazard and heat treatment as a control measure. Which of the following statements are correct?

a) The heat treatment must be validated to demonstrate that the hazard is effectively controlled

b) Validation is no longer necessary if the control measure has been established

c) The establishment of the control measure should be based on data that support the prevention, elimination, or reduction of the hazard to an acceptable level

d) Validating the hazard analysis is sufficient for the established control measure

79. In the HACCP system, control at a CCP is restored by applying corrective measures. Which of the following statements are correct?

a) Corrective actions must address the issue of potentially hazardous products

b) Corrective actions serve to discipline the personnel responsible

c) Corrective actions must remove the cause of the critical limit deviation and bring the process back under control

d) Recording the corrective action is not necessary if the problem has been remedied quickly

80. Establishing a large number of CCPs in the HACCP plan “as a safety measure” can have the following consequences:

a) Creating a very complicated HACCP plan that is difficult to manage

b) Additional CCPs reduce implementation costs

c) Overcomplicated HACCP plans are the most viable in the long term

d) A large number of CCPs facilitates validation