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DEPARTMENT: PRECLINICAL SCIENCES

DISCIPLINE: PHYSIOLOGY

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TOPICS AND REFERENCES

1. The Digestiv System pg. 151-198
2. Metabolism and temperature regulation pg. 336-349

References:
Iuliana Codreanu - Textbook of animal Physiology - București, Printech, 2018.

QUESTIONNAIRE

150 questions with five possible answers, of which only one is correct

1. The absorption of phosphorus takes place in:
   a. the entire digestive tract
   b. stomach
   c. colon
   d. jejunum
   e. duodenum

2. The absorption of phosphorus is optimal at the Ca/P ratio of:
   a. 2/3
   b. 2/4
   c. 2/1
   d. 1/2
   e. 1/1

3. Water plays many roles in the body. One of the roles it does not play is:
   a. solvent for chemicals
   b. diffusion medium
   c. heat transport
   d. lubricant
   e. solvent for ingested fats

4. The Ca/P ratio in birds is found between:
   a. 1/4 – 1/1
   b. 1/1 – 1/2
   c. 1/2 – 1/4
   d. 3/1 – 3.5/1

e. 1/3 – 1.5/3

5. One of the roles that phosphorus does not play in the body is:
   a. enters the composition of the bones
   b. enters the composition of the teeth
   c. contributes to maintaining the acid-basic balance of the blood
   d. contributes to maintaining the acid-basic balance of the urine
   e. contributes to the nervous influx formation

6. Parathyroid hormone has the following biological effects, except:
   a. increases the concentration of calcium in the blood
   b. decreases the concentration of phosphorus in the blood
   c. stimulates renal calcium reabsorption
   d. stimulates the elimination of phosphates in the kidneys
   e. stimulates phosphate absorption

7. The absorption of iron is stimulated by:
   a. hydrochloric acid
   b. trypsin
   c. chymotrypsin
   d. the presence of phosphates
   e. the presence of fats

8. Through its enzymes (salivary amylase), saliva triggers the digestion of certain food substrates such as:
   a. glucose
   b. amino acids
   c. triglycerides
   d. starch
   e. the saliva does not contain enzymes

9. The excretion of iron is done by:
   a. renal pathway
   b. respiratory pathway
   c. digestive pathway
   d. iron is not excreted, being completely recovered from the catabolism products
   e. both urinary and digestive pathways

10. Regarding the intestinal phase of the regulation of pancreatic juice secretion, the following answer is not correct:
   a. involves endocrine and nervous stimuli
   b. the endocrine component of this regulation phase is represented by cholecystokinin and secretin
   c. in this stage, the hormone secretin causes the secretion of a pancreatic juice that is low in bicarbonate but rich in enzymes
   d. is the last phase of the pancreatic juice secretion regulation
   e. this phase intensifies the nervous stimulation in the cephalic and gastric phases

11. The hydrochloric acid in the gastric juice is produced by:
    a. the main cells of the gastric glands
    b. the parietal cells of the gastric glands
    c. the intermediate cells of the gastric glands
    d. the mucous cells of the gastric glands
    e. the generating cells of the gastric glands

12. The activation of pepsinogen:
    a. takes place in the small intestine
    b. takes place through an autocatalytic process at an alkaline pH
    c. occurs in the presence of gastrin in the main cells of the gastric glands
    d. occurs both in the presence of HCl and through an autocatalytic mechanism
    e. is not required, as it is an active enzyme

13. In the synthesis of HCl by the gastric glands, the hydrogen ions in the HCl structure come from:
    a. lactic acid dissociation
    b. water dissociation
    c. CO_2 intracellular dissociation
    d. carbonic acid intracellular dissociation
    e. inorganic phosphates intracellular dissociation

14. Under the general name of zymogens are known:
    a. digestive enzymes in general
    b. digestive proenzymes activated in the lumen of the digestive tract
    c. gastric juice enzymes
    d. intestinal juice enzymes
    e. digestive enzymes released in an active form

15. The species that has the most alkaline pH of the saliva along with a higher bicarbonate and phosphate concentration than that of the blood serum at this level is:
    a. equine
    b. feline
    c. ruminants
    d. swine
    e. none of the above

16. The hydrochloric acid in the gastric juice has digestive roles. Among its roles does not count:
    a. transformation of pepsinogen into pepsin
    b. reduction of Fe^{3+} to Fe^{2+}
    c. activation of trypsinogen to trypsin
    d. inhibition of the gastric secretion
    e. stimulation of the secretin release

17. The hydrochloric acid in the gastric juice has digestive roles. Among its roles does not count:
    a. transformation of pepsinogen into pepsin
    b. reduction of Fe^{3+} to Fe^{2+}
    c. activation of chymotrypsinogen to chymotrypsin

d. inhibition of the gastric secretion
e. stimulation of the secretin release

18. The activation of pepsinogen in pepsin occurs:
a. into the secretory gastric cells
b. into the intestinal lumen
c. on contact with the acidic gastric contents
d. anywhere in the compartments and structures mentioned above
e. the stomach does not produce pepsinogen but pepsin

19. The activation of pepsinogen consists of:
a. binding the pepsinogen with the protons (H^+)
b. addition of a peptide residue to the pepsinogen molecule
c. cleavage of the pepsinogen molecule to active pepsin and removal of an inhibitory peptide residue
d. removal of an inhibitory inorganic radical from the pepsinogen molecule
e. none of the answers is correct

20. Under the general name of zymogens are known:
a. the digestive enzymes in general
b. the digestive proenzymes activated in the lumen of the digestive tract
c. the gastric juice enzymes
d. the intestinal juice enzymes
e. the digestive enzymes released in their active form

21. Regarding the composition of gastric juice, the following statement is incorrect:
a. the proteolytic enzymes of the gastric juice are represented by pepsin and trypsin
b. gastric mucus has a high affinity to combine with gastric acid
c. the intrinsic factor secreted by the fundic glands has a role in the absorption of vitamin B12
d. along with hydrochloric acid, carbonic, butyric and lactic acids also compete in achieving a very acidic pH
e. in infants, gastric lipase is more active than in adults

22. The HCl secretion is stimulated by:
a. somatostatin
b. secretin
c. prostaglandins
d. gastrin
e. epidermal growth factor

23. Parietal cells from the gastric glands secrete:
a. hydrochloric acid
b. pepsin
c. pepsinogen
d. carbonic anhydrase
e. bicarbonate

24. Regarding the cephalic phase of the gastric secretion regulation, the following answer is not correct:
    a. the excitation of the oral mucosa chemoreceptors causes the secretion of gastric juice
    b. the stimuli have a cephalic origin
    c. this phase has no humoral (hormonal) component
    d. the secretion of gastric juice is performed by vago-vagal reflex
    e. the sight, the smell of the food, as well as the proximity of meal times determine the secretion of gastric juice

25. The pyloric glands secrete the hormone called:
    a. inhibin
    b. gastrin
    c. pepsinogen
    d. insulin
    e. adrenaline

26. Intragastric coagulation of milk is produced by:
    a. pepsin in adult animals, chymosin (rennin) in infants
    b. lipase
    c. amylase
    d. trypsin
    e. chymotrypsin

27. The specificity of pepsin lies in the fact that it:
    a. hydrolyses the peptide chains of the aromatic amino acids
    b. hydrolyses the peptide chains of the carboxylic amino acids
    c. hydrolyses the peptide chains of the basic amino acids
    d. has no specificity, hydrolyzing all proteins
    e. answers a and b are valid

28. The optimal pH of action for pepsin is:
    a. weak acidic (5.5 – 6)
    b. neutral
    c. alkaline
    d. unimportant
    e. very acidic (1.5 – 3)

29. Rennin from the gastric juice participates in:
    a. proteins digestion in infant animals
    b. lipid digestion in infant animals
    c. carbohydrates digestion in infant animals
    d. trypsinogen activation
    e. all the answers are correct

30. Rennin from the gastric juice is a:
    a. endopeptidase
    b. exopeptidase
    c. lipase
    d. amylase

e. carboxypeptidase

31. The main hormone that contributes to the regulation of gastric juice secretion in the gastric phase is:
    a. secretin
    b. cholecystokinin
    c. gastrin
    d. bombesin
    e. adrenaline

32. The main hormone that contributes to the regulation of gastric juice secretion in the cephalic phase is:
    a. secretin
    b. cholecystokinin
    c. gastrin
    d. bombesin
    e. adrenaline

33. Gastrin is a hormone produced by the:
    a. G cells from the gastric mucosa
    b. I cells from the duodenal epithelium
    c. oxyntic cells from the gastric glands
    d. main cells of the gastric glands
    e. gastric epithelium

34. In the digestive secretions, the role of the gastrin consists of:
    a. stimulation of the hydrochloric acid
    b. inhibition of the gastric glands secretion
    c. stimulation of the pancreatic secretion
    d. stimulation of the intestinal secretion
    e. inhibition of the intestinal secretion

35. Gastrin secretion is inhibited by:
    a. alkaline pH
    b. acidic pH
    c. neutral pH
    d. cholecystokinin
    e. secretin

36. Enterokinase has the following role:
    a. catalyzes the transformation of trypsinogen into trypsin
    b. catalyzes the transformation of pepsinogen into pepsin
    c. catalyzes the transformation of chymotrypsinogen into chymotrypsin
    d. stimulates the synthesis of pancreatic enzymes
    e. inhibits the synthesis of pancreatic enzymes

37. The secretion of the Brunner glands has the following qualities, except the fact that it is:
    a. a secretion rich in digestive enzymes
    b. a mucous secretion

c. a secretion devoid of digestive enzymes
d. a secretion rich in bicarbonate
e. a secretion with a role in protecting the intestinal epithelium

38. Enterokinase is produced by the:
a. liver
b. Brunner cells
c. Lieberkühn cells
d. gastric glands
e. pancreas

39. Which are the three gastric secretion phases?
a. cephalic phase, gastric phase, intestinal phase
b. cephalic phase, absorption phase, digestive phase
c. gastric phase, intestinal phase, excretion phase
d. oral gastric phase, esophageal phase, gastric phase
e. digestive phase, absorption phase, excretion phase

40. The presence of maltase is a characteristic of:
a. all digestive secretions
b. the salivary secretion
c. the pancreatic secretion
d. the intestinal secretion
e. the gastric secretion

41. Aminopeptidases have as a specific substrate:
a. lipids
b. starch
c. glycogen
d. proteins in general
e. peptides

42. Carboxypeptidases have as a specific substrate:
a. lipids
b. starch
c. glycogen
d. proteins in general
e. peptides

43. Trypsinogen:
a. represents the active form of trypsin
b. is a gastric enzyme
c. represents the inactive form of trypsin
d. activates the chymotrypsinogen
e. is activated by chymotrypsinogen

44. Most intestinal enzymes exert their action within:
a. exodigestion
b. luminal digestion

c. membrane digestion
d. intraluminal digestion
e. a specific indication does not exist

45. In species with a small capacity gallbladder, it has only role in:
a. the water absorption from the bile fluid
b. the passage of the bile
c. regulator organ of the exhaust pressure
d. bicarbonate synthesis
e. excretion of the hem catabolism products

46. During the period of digestive absorption, the liver and peripheral tissues metabolic processes are directed predominantly towards:
a. the liver acts in anabolic way and the peripheral tissues are directed towards consumption
b. catabolism of the nutrients from the intake
c. during this period, the liver and the peripheral tissues are over-agglomerated and have a high metabolic activity without any specific target
d. releasing towards the tissues the excess of nutrients absorbed in order to cover the energy requirements
e. storage of the nutrients from the intake

47. During the period of digestive absorption, the liver:
a. retains the triglycerides and converts them into glucose and glycogen that is stored in the liver
b. retains the excess of blood glucose and converts it into glycogen and triglycerides
c. releases the glucose because it is necessary for the peripheral tissues and its uptake by the liver is not controlled by the insulin
d. retains the triglycerides that are stored in the liver determining „fatty infiltration of the liver”
e. none of the answers is correct

48. At a pH between 6 – 8, the activation process of the trypsinogen:
a. stops
b. becomes autocatalytic
c. starts
d. decrease
e. none of the above

49. The pancreatic enzyme for digesting carbohydrates is pancreatic amylase, which hydrolyses:
a. starch
b. glycogen
c. cellulose
d. amino acids
e. starch and glycogen

50. Chylomicrons and low-density lipoproteins in the blood release fatty acids into the peripheral tissues, the process being controlled by:
a. thyroxine

b. adrenaline
c. insulin
d. glucagon
e. cortisol

51. The total amount of glycogen that can be stored in the liver is limited to:
    a. maximum 5% of the liver's weight
    b. maximum 20% of the liver's weight
    c. maximum 2% of the liver's weight
    d. the liver doesn't store glycogen, it has a metabolic role of synthesis of different energetic substances
    e. maximum 10% of the liver's weight

52. The physiological roles of water are as follows, except for:
    a. diffusion medium
    b. heat transport
    c. lubricant to reduce the friction force
    d. solvent for lipids
    e. transport of nutrients and cells

53. The bile pigments, bilirubin and biliverdin:
    a. don't have digestive functions
    b. have a role in the starch digestion
    c. have a role in the cellulose digestion
    d. are excreted by the pancreatic acinar cells
    e. have important digestion functions

54. In regulating water metabolism is not involved:
    a. the antidiuretic hormone
    b. the vasopressin
    c. the hypothalamus
    d. the aldosterone
    e. the glucagon

55. Serum proteins fulfil many functions. One of the functions that is NOT fulfilled by these proteins is:
    a. transport of the fatty acids
    b. constitutes source of amino acids for the synthesis of extrahepatic proteins
    c. role in creating the oncotic pressure of the plasma
    d. transport vehicle for different hormones
    e. transport vehicle for different vitamins

56. The most important stimulus for causing the gallbladder contractions is the hormone:
    a. pepsin
    b. insulin
    c. parathormone
    d. cholecystokinin
    e. bilirubin

57. The primary function of the small intestine is to:
    a. absorb nutrients and their digestive products into the blood
    b. excrete nutrients and their digestive products into the blood
    c. increase the amount of nutrients in the body
    d. reduce the absorption rate of the nutrients
    e. digest and excrete the nutrients

58. The key hormone that plays a role in initiating the mechanisms of conversion of amino acids that come from the digestive absorption into glucose is:
    a. hydrocortisone
    b. thyroxine
    c. cortisol, as a hormone that is released in stressful situations, which requires increased quantities of glucose
    d. insulin, because it is a hormone with hypoglycemic role
    e. glucagon

59. In the case of a balanced intake of carbohydrates and proteins, increased aminoacidemia stimulates both insulin and glucagon secretion. Intense glucagon secretion plays the following role:
    a. decrease of the aminoacidemia
    b. counteracts the effects of an increased hyperinsulinemia (by priming the gluconeogenic mechanisms)
    c. contributes to maintaining glycaemia by inhibiting the peripheral glucose uptake
    d. regulates the serum lipids concentration by lipolysis effect
    e. none of the answers above is correct

60. One of the disadvantages of storing energy in the form of lipids is the fact that:
    a. the adipose tissue contains little water
    b. fats, being insoluble in water, require special forms of blood transport
    c. fatty acids are converted to glucose, decreasing the availability in case of intense energy demands
    d. lipids are highly reduced substances, which decreases their energy quality
    e. none of the answers above is correct

61. The bicarbonate ions from the intestinal mucus have an important role in:
    a. neutralizing the liver bile
    b. neutralizing the pancreatic secretion
    c. neutralizing the hydrochloric acid entering the duodenum from the stomach
    d. acidifying the intestinal content
    e. neutralizing the intestinal content that has a very acidic pH

62. The bile salts emulsifying function on the lipids is possible due to the fact that:
    a. the bile salts decrease the surface tension of the particles
    b. the bile salts contain lipase
    c. the bile salts are lipolytic enzymes
    d. the bile salts are proteolytic enzymes
    e. none of the answers above is correct

63. In the liver, glucagon:
    a. stimulates glycolysis

b. stimulates glycogenolysis
c. inhibits glycogenolysis
d. inhibits gluconeogenesis
e. stimulates glycogenogenesis

64. The mobilization of amino acids from the muscles is stimulated to a large extent by:
a. protein catabolizing sex hormones
b. thyroxine, released under energy demand conditions
c. insulin
d. absence of cortisol and insulin deficiency
e. absence of insulin and presence of cortisol

65. Bile salts, by breaking down fat globules into smaller droplets in a process called emulsification, enhance the digestive action of:
a. pepsin
b. amylase
c. lipase
d. trypsin
e. chymotrypsin

66. The proteolytic digestive enzymes when are first synthesized in the pancreatic cells, they are:
a. in the inactive forms trypsinogen, chymotrypsinogen and procarboxypolypeptidase
b. in the active forms trypsinogen, chymotrypsin and procarboxypolypeptidase
c. in the inactive forms trypsin, chymotrypsin and carboxypolypeptidase
d. in the active forms trypsin, chymotrypsinogen and carboxypolypeptidase
e. the pancreatic juice does not contain proteolytic enzymes

67. The secretion of the sodium bicarbonate from the pancreatic juice is carried out by:
a. the ductal cells
b. the beta cells of the Langerhans islets
c. the pancreatic juice-secreting acini cells
d. the alpha cells of the Langerhans islets
e. the duodenum epithelial cells

68. The fatty acids released from the adipose tissue into the blood, in order to be transported:
a. do not require the presence of the vehicle molecules
b. are reversibly bound to gamma-globulins
c. are reversibly bound to albumins
d. are packed in low density lipoproteins
e. are packed in chylomicrons

69. In order to be activated the pepsinogen must come in contact with:
a. pepsin
b. secretin
c. trypsin
d. hydrochloric acid
e. sodium bicarbonate

70. In long periods of undernutrition or in complete starvation, the body uses for the production of energy mainly:
    a. free fatty acids
    b. fatty acids and ketone bodies
    c. beta-oxidation of fatty acids
    d. high glycerol release
    e. lipids synthesis, in order to support this period characteristic energy degradation

71. The gastric enzymes are:
    a. pepsin, rennin and lipase
    b. pepsin, trypsin and lipase
    c. pepsin, trypsin and amylase
    d. trypsin, chymotrypsin and amylase
    e. amylase, lipase and pepsin

72. The gastric juice is secreted continuously. Control of the gastric secretion is achieved through:
    a. neuronal and humoral (hormonal) mechanisms
    b. only neuronal mechanism
    c. only humoral mechanism
    d. the secretion does not need control, the gastric juice continuously secreted
    e. neuronal and intrinsic mechanism

73. Propionate is an important glucose precursor in ruminants. In ruminants, propionate comes from:
    a. “de novo” endogenous synthesis
    b. ruminal absorption as volatile fatty acid
    c. catabolism of fatty acids
    d. catabolism of propionic acid
    e. intermediate glucose catabolism

74. Ruminants also ensure glucose storage by protecting its metabolic degradation by the fact that:
    a. fatty acids are synthesized from acetate
    b. fatty acids are synthesized from glucose
    c. do not produce fatty acids
    d. fatty acids are synthesized from amino acids
    e. fatty acids are synthesized from amino acids and some enzymes

75. Ruminants are permanently in a potential state of deficiency of:
    a. glucose
    b. propionate
    c. acetate
    d. proteins
    e. lipids

76. The cephalic phase of the gastric secretion occurs:
    a. when the food enters the stomach
    b. when the food enters the small intestine

c. before the food enters the stomach
d. only in ruminants
e. only in carnivores

77. The pancreatic juice is mainly composed of:
a. water, enzymes and hydrochloric acid
b. enzymes and sodium bicarbonate
c. enzymes, bile and mucus
d. water, mucus and hydrochloric acid
e. water, pepsin and hydrochloric acid

78. The ammonia resulting from amino acid deamination is eliminated from the body in the form of:
a. ketone analogues
b. urea
c. urea ammonium
d. alanine
e. leucine

79. Muscle mass reacts to energy demands by:
a. glucose synthesis to support the effort requirements
b. amino acids synthesis
c. glucose mobilization
d. lipids mobilization
e. amino acids mobilization

80. The water requirement of farm animals is directly proportional with:
a. the physiological state
b. the degree of dehydration
c. weight
d. body surface
e. age, being higher in old age

81. Water plays many roles in the body. One of the roles that it doesn't fulfil is:
a. solvent for chemicals
b. diffusion medium
c. heat transport
d. lubricant
e. solvent for ingested fats

82. The synthesis of most of the ketone bodies in the lipid metabolism is performed in:
a. rumen
b. intestine
c. liver
d. kidneys
e. lungs

83. Regulating calcium metabolism involves controlling the movement of calcium between the extracellular fluid and the following body structures:

a. intestine and bone
b. bone, liver and gastrointestinal tract
c. bone and kidneys
d. bone, gastrointestinal tract and kidneys
e. gastrointestinal tract

84. Increased blood calcium concentration by about 10% causes immediate increase of the secretion of:
a. parathormone
b. calcitonin
c. cortisol
d. androgen hormones
e. estrogenic hormones

85. The hormone that stimulates osteoclast activity and the renal calcium reabsorption is:
a. parathormone
b. calcitonin
c. insulin
d. glucagon
e. estrogens

86. The intestinal phase of gastric juice secretion regulation is triggered by:
a. the food entering into the stomach
b. the food entering into the duodenum
c. the fodder ingestion
d. immediately after the food prehension, mastication and deglutition
e. in the cephalic phase

87. The main pancreatic enzyme involved in the digestion of the ingested fats is:
a. amylase
b. bile
c. pepsin
d. trypsin
e. lipase

88. The inhibitory role of secretin on the gastric juice secretion, is exercised by following:
a. it acts directly on the main cells that secret gastric juice
b. it acts on the G cells that secret gastrin
c. it acts on the oxyntic cells by directly inhibiting the secretion of gastric juice overall
d. it acts directly on the main cells that secret gastric juice and on the G cells
e. secretin is not a hormone that plays a role in the regulation of the gastric juice secretion

89. One of the following hormones has no inhibitory effects on the gastric juice secretion:
a. secretin
b. cholecystokinin
c. somatostatin
d. enteroglucagon
e. gastrin

90. Regarding the intestinal phase of the pancreatic juice secretion regulation, one of the following answers is not correct:
    a. involves endocrine and nervous stimuli
    b. peptides, fats and low pH in the duodenal lumen determine the gastrin secretion
    c. nervous regulation is mediated vagally
    d. the low pH also determines the secretion of the hormone secretin from the duodenal epithelium
    e. the secretion of cholecystokinin in this phase, determines a pancreatic juice rich in enzymes

91. The composition of the bile consists of:
    a. bile salts
    b. cholesterol
    c. biliary pigments
    d. fatty acids
    e. all the answers are correct

92. The enzyme that stimulates the carbonic acid synthesis required for the production of pancreatic sodium bicarbonate is:
    a. pepsin
    b. trypsin
    c. chymotrypsin
    d. rennin
    e. carbonic anhydrase

93. The pancreatic juice contains many proteases. One of the proteases that it does not contain is:
    a. trypsin
    b. chymotrypsin
    c. carboxypeptidase
    d. collagenase
    e. pepsin

94. The notion of zymogen is synonymous with that of:
    a. proenzyme
    b. active enzyme, inactivated in the digestive lumen
    c. lipase
    d. glycolytic enzyme
    e. answers a and b are correct

95. Activation of trypsinogen in the pancreatic juice is accomplished by:
    a. trypsin
    b. autocatalytic
    c. enterokinase
    d. enterokinase, trypsin/ autocatalytic process
    e. none of the answers is correct

96. The activation of chymotrypsinogen consists of:
    a. creating a slightly alkaline pH, optimal for activation

b. removing some peptide fragments from its molecule structure
c. providing the specific substrate is sufficient for activation
d. chymotrypsinogen is an active enzyme, it does not require activation
e. answers a and b are correct

97. Intra-intestinal coagulation of milk is accomplished by:
a. pepsin
b. trypsin
c. chymotrypsin
d. no enzyme in the intestine, milk coagulation takes place in the stomach
e. answers b and c are correct

98. The regulation of bile secretion is done through a mechanism:
a. positive feedback
b. negative feedback
c. feed forward
d. push-pull
e. none of the above, the bile secretion is continuous

99. The hormone involved in bile production is:
a. gastrin
b. cholecystokinin
c. secretin
d. motilin
e. gastric inhibitory peptide

100. In which of the following digestive secretions the bicarbonate cannot be found:
a. bile
b. pancreatic juice
c. gastric juice
d. intestinal juice
e. none of the above contains bicarbonate

101. The properties of pancreatic juice are the following except for:
a. it is a colorless liquid
b. it is slightly viscous
c. has a high sodium bicarbonate content
d. has an acidic pH
e. contains proteolytic, glycolytic and lipolytic enzymes

102. The properties of gastric juice are the following except for:
a. it is a colorless liquid
b. it is relatively isotonic with the plasma
c. it has a very acidic pH
d. it contains organic substances represented by enzymes, mucus and intrinsic factor
e. the gastric glands secrete proteolytic, glycolytic and lipolytic enzymes

103. The following statement about zymogens is not correct:
a. are active proteolytic enzymes

b. their secretion is necessary to avoid the autodigestion of the synthesizing cells
c. are represented by pepsinogen, trypsinogen, chymotrypsinogen
d. are activated in the digestive lumen
e. are stored in the cytoplasm of synthesizing cells until their release into the lumen of the digestive tract

104. Regarding the glucose metabolism, the following answer is not correct:
a. the absorbed glucose is conducted through the portal vein
b. the excess glucose is stored as liver glycogen and triglycerides
c. the glucose released by the liver processing is stored as muscle glycogen
d. the transport of glucose in the liver and muscles is controlled by insulin
e. the process of glucose degradation is done by glycogenolysis

105. Between meals or in periods of starvation:
a. glycogenolysis and gluconeogenesis are stimulated
b. gluconeogenesis is inhibited
c. glycogenesis is stimulated
d. glycolysis is stimulated
e. is done the switch to glucose consumption

106.Regarding the amino acids metabolism, the following answer is not correct:
a. some of the amino acids retained by the liver are used for the synthesis of own proteins
b. the liver synthesizes most of the serum proteins
c. serum proteins are a source of amino acids for extrahepatic syntheses
d. most of the absorbed amino acids undergo a deamination process in the liver
e. by amino acids deamination of the corresponding keto analogues are formed

107. Regarding the lipid metabolism, the following answer is not correct:
a. triglycerides represent the ideal form of energy storage
b. triglycerides have twice the energy value of carbohydrates and proteins
c. fatty acids can be easily converted into glucose, so they contribute to the energy supply of the CNS
d. fats require special forms of transport
e. lipids are absorbed through the intestinal wall in the form of micelles of mono-, di- or triglycerides, glycerol and fatty acids

108.Trypsin:
a. is an exopeptidase
b. is secreted in its active form
c. initially acts at an acidic pH
d. enterokinase causes its activation
e. is a glycolytic enzyme

109.Cholecystokinin:
a. is secreted by the "I" cells in the jejunal mucosa
b. acts on ductal cells causing the secretion of a pancreatic juice poor in protein

c. the CCK secretion is stimulated by the acidic pH reached in the duodenum
d. it acts on acinar cells causing the secretion of a pancreatic juice rich in enzymes
e. the CCK secretion is stimulated by the sympathetic nerve endings

110. Regarding the proteins digestion, the following answer is not correct:
a. endopeptidases release free amino acids from the protein molecule
b. the proteases are secreted in inactive form
c. the proteins digestion begins in the stomach
d. the active rennin coagulates the milk at pH 3-3,5
e. nucleases hydrolyze nucleic acids

111. Secretin:
a. is a hormone involved in the pancreatic secretion of bicarbonate
b. it's secretion is stimulated by the presence of digestive fats and mono-glycerides
c. it causes an enzyme-rich pancreatic secretion
d. it intervenes in the cephalic phase of gastric juice secretion
e. is secreted by the "I" cells of duodenum & jejunum

112. The characteristics of the saliva obtained by stimulation of the parasympathetic system are as follows, except:
a. watery
b. rich in dry substances
c. it is very dilute
d. is secreted in large quantities
e. is not viscous

113. Regarding the deglutition (swallowing), the following answer is not correct:
a. the pharyngeal and esophageal phases of deglutition are involuntary
b. during the pharyngeal phase the airways are avoided
c. during the esophagus phase swallowing apnea occurs
d. it is the final stage of pregastric digestion
e. the involuntary phases of deglutition are triggered after pharyngeal receptors are stimulated

114. Which feature is not specific to segmentation contractions:
a. divide the intestine into segments with a reduced lumen and segments with an unmodified lumen
b. reduce the speed of movement of the intestinal contents
c. bring the contents into contact with the surface of the intestinal mucosa
d. mix the intestinal contents with the digestive juices
e. they allow adaptation to large amounts of food, without increasing the intraluminal pressure

115. Pepsinogen is secreted by the following types of cells:

a. parietal cells
b. chief cells
c. mucous neck cells
d. G cells
e. pyloric antrum cells

116. The following statement about the entero-gastric reflex is not correct:
a. it is a vago-vagal reflex
b. stimulates intestinal motility, promoting duodenal evacuation
c. adjusts the amount of food that leaves the stomach according to the volume of intestinal contents
d. the effector is the muscles of the gastric wall
e. the receptors for this reflex are located in the duodenal mucosa

117. The following statement is not correct about gastric chyme:
a. results from mixing food with gastric juice
b. reaching the duodenum activates the receptors that stimulate gastric secretion
c. inactivates salivary amylase
d. the peristaltic contractions of the stomach participate in its formation
e. when it reaches in large amount in the duodenum, it is pushed back into the stomach to continue digestion

118. Which statement about amylase is not correct:
a. it is also found in gastric juice, but it is not produced by the stomach
b. it breaks down carbohydrates starting right from the mouth
c. it is a glycolytic enzyme
d. the final products of hydrolysis are polysaccharides
e. alpha-amylase activates optimally at a pH around 7.1

119. Which enzyme is not secreted in an inactive form:
a. trypsin
b. chymotrypsin
c. pepsin
d. renin
e. enterokinase

120 . The following statement concerning gastrin is not correct:
a. an increase pH stimulates its release
b. stimulates parietal cells to increase HCl production
c. activates the stomach smooth muscles contractions
d. at pH 1- gastrin secretion is completely blocked
e. inhibits gastric motility and evacuation

121. Regarding the gastric mechanical digestion, the following answer is not correct:
   a. mixing waves occur within a few moments after food enters animal stomach
   b. a mixing wave is a segmentation contraction
   c. mixing waves are contractions that mix and soften the food with gastric juices to create chyme
   d. the initial mixing waves are relatively gentle, but these are followed by more intense waves
   e. the mixing waves start at the body of the stomach and increasing in force as they reach the pylorus

122. The following statement regarding protein digestion is not correct:
   a. it starts in the stomach
   b. it ends in the large intestine
   c. pepsin cleaves proteins into smaller polypeptides chains
   d. after the stomach, it is continued by the pancreatic proteolytic enzymes, in the small intestine
   e. the end product are amino acids, resulting from the action of brush border enzyme of enterocytes.

123. Regarding the digestion of lipids, the following answer is not correct:
   a. free fatty acids and glycerol are produced by the hydrolysis of lipids
   b. gastric lipase is the most active lipase in the digestive tract
   c. pancreatic lipase acts on lipids previously emulsified by bile
   d. pancreatic lipase breaks down triglycerides into free fatty acids and a monoglyceride
   e. the acidity of the gastric chyme activates lipase

124. Cholecystokinin:
   a. intervenes in the control of gastric secretion
   b. it is stimulated by gastric juice which has high acidity
   c. it is secreted by the ”S” cells of duodenum
   d. it is the main humoral stimulus for the enzyme secretion, in pancreatic cells
   e. it is secreted in response to the presence of undigested carbohydrates in the small intestine

125. During pharyngeal phase of deglutition:
   a. breathing stops temporarily
   b. the soft palate descends, closing the nasopharynx
   c. the tongue presses the soft palate
   d. the hyoid bone and larynx are pulled back
   e. the glottis is positioned above the epiglottis and blocks the laryngeal orifice

126. Peristaltic contractions:
   a. are moving the intestinal contents, in oral direction
   b. are isolated contractions of the longitudinal muscles fibers.

c. reduce the movement speed of the intestinal contents
d. they are moving the intestinal contents bidirectionally
e. consist of a contraction wave preceded by a relaxation wave

127. The following type of contraction are not, generally, physiological movements of the gastrointestinal tract:
a. antiperistaltic contractions
b. pendular contractions
c. segmentation contractions
d. tonic contractions
e. propulsive contractions

128. Stimulation of the sympathetic nervous system causes a salivary secretion with the following feature:
a. watery
b. poor in dry substances
c. viscous
d. very dilute
e. secreted in large quantities

129. The stomach is protected from self-digestion by the mucosal barrier. Gastric mucus has a high affinity for combination with:
a. gastric acids
b. pepsinogen
c. rennin
d. gastric lipase
e. the intrinsic factor

130. Regarding the digestion in the small intestine, the following answer is not correct
a. carbohydrates are broken down to monosaccharides
b. proteins are broken down to amino acids
b. fats are broken down to fatty acids and glycerol
c. a low pH in duodenal lumen stimulates de secretion of cholecystokinin, which in its turn stimulates the secretion of bicarbonate ions from the pancreatic duct cells
d. chyme passes into the small intestine it is mixed with the pancreatic juice, intestinal juice and bile,

131. Sympathetic stimulation causes:
a. Peristaltic contractions of the descending colon
b. Peristaltic contractions of the sigmoid colon
c. Relaxation of the internal anal sphincter
d. Decreased peristalsis of the large intestine
e. Peristaltic contractions of the rectum

132. Which enzyme is not specific for intestinal juice:
a. dipeptidase
b. nuclease, nucleosidase
c. maltase
d. amylase
e. enterokinase

133. The bile production:
a. It is not an ongoing process
b. It occurs in the gallbladder
c. it also takes place between meals, but the bile is stored
d. It is triggered by the protein-rich chyme that enters the duodenum
e. is stimulated by the pancreatic amylase

134. The main hormone which stimulates both, the bile secretion and bile excretion is:
A. melatonin
b. oxytocin
c. insulin
d. cholecystokinin
e. glucagon

135. Regarding the bile, the following answer is not correct:
a. bile salts emulsify large fat droplets into smaller droplets
b. a great part of the bile salts are reabsorbed and reused
c. contains digestive enzymes
d. bile secretion is continuous
e. participates in the digestion and absorption of lipids

136. The species in which the increase of the gastric pressure strongly closes the lower esophageal orifice, causing conditions including colic or rupture of the stomach during vomiting is:
a. the horse
b. the dog
c. the pig
d. the cow
e. the rabbit

137. Regarding the deglutition, the following statement is not correct:
a. it takes place after chewing (mastication) and involves voluntary and involuntary phases
b. between swallowing both, the body of the esophagus and the two sphincters are relaxed

c. it consists in the passage of food from the oral cavity to the stomach
d. involuntary phases of the deglutition are triggered by food entering the pharynx
e. the propulsion of the food bolus through the esophagus is done by peristaltic contractions

138. In the large intestine the digestion is done with the help of:
a. glycolytic enzymes
b. hormones
c. proteases
d. bacteria
e. bile

139. Gastrointestinal contractions have the following roles, except:
a. they move the food in aboral direction
b. they maintain temporary the food in different areas of the digestive tract, in order to facilitate digestive processes
c. mechanical processing of the food and mixing with digestive juices
d. they make food to come into contact with the digestive absorption surface
e. their formation and propagation are properties of the gastrointestinal striated muscles

140. Gastric motility has the following roles, except:
a. provides the intestine a contents with a fluid consistency
b. ensures the temporary storage of ingested food
c. puts ingested food in contact with gastric juice
d. is mainly represented by segmentation and pendular contractions
e. ensures a controlled evacuation of the gastric contents in the small intestine

141. Which of the intestinal contractions have a propulsive effect:
a. contractions of intestinal villi
b. segmentation contractions
c. peristaltic contractions
d. tonic contractions
e. pendular contractions

142. The main functions of the colon are, except:
a. water absorption
b. mechanical food processing
c. electrolyte absorption
d. temporary storage of feces
e. fermentation of organic matter escaped from the digestion and absorption of the small intestine

143. About saliva the following statement is not correct:

a. is the secretion product with the highest water content in the body
b. salivary flow depends on the species and on the water content of the feed
c. ruminant saliva is rich in bicarbonate and has an alkaline pH
d. saliva secretion can be stimulated by conditioned and unconditioned reflex
e. only the parasympathetic component intervenes in the regulation of salivary secretion

144. About ketone bodies the following statement is not correct:
a. are water-soluble molecules
b. are the breakdown product of acetone
c. serve as a fuel source
d. if they are produced faster than they can be used, they can be broken down into CO_2 and acetone.
e. they can not be used as an alternative energy source for the brain when glucose is limited

145. In the phosphorylation process, the highest amount of energy results from the carbohydrates, through:
a. aerobic glycolysis
b. glycogenolysis
c. anaerobic glycolysis
d. gluconeogenesis
e. glycogenesis

146. Regarding the regulation of the gastric juice secretion, about the gastric phase the following statement is not correct:
a. is triggered by excitation of receptors and chemoreceptors from the oral cavity
b. has both, a nervous and a humoral component
c. the gastric juice secreted in this phase is strongly acidic and rich in enzymes
d. involves the release of gastrin by vago-vagal reflex
e. is the second phase of regulation of the gastric juice secretion

147. Regarding the pancreatic juice the following statement is not correct:
a. is a colorless, slightly viscous, alkaline liquid
b. pancreatic proteases are synthesized as zymogens
c. the activation of the chymotrypsinogen is an autocatalytic process
d. regulation of pancreatic secretion has three phases: cephalic, gastric and intestinal phase
e. gastrin stimulates the secretion of pancreatic juice

148. Regarding bile pigments, the following statement is not correct:
a. are hemoglobin catabolic products
b. in the liver they are conjugated with the glucuronic acid
c. give the bile characteristic color, depending on the species

d. they do not have digestive functions
e. they are freely transported in the bloodstream (not combined with other substances)

149. Which of the following roles of the bile is not correct?
a. contributes to the neutralizing of any excess stomach acid before it enters the ileum
b. inhibits the peristaltic contractions
c. through the phospholipids, cholesterol and bile acids it contains, participates in the digestion and absorption of lipids
d. through the bile salts acts as bactericidal
e. emulsifies lipids

150. Which enzyme is not found in pancreatic juice:
a. trypsin
b. renin
C. chymotrypsin
d. carboxypeptidase
e. lipase

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