CHAPTER 16

Digestion and Absorption

16.1 Digestive System

1. Identify the correct statement with reference to human digestive system.
(a) Ileum opens into small intestine.
(b) Serosa is the innermost layer of the alimentary canal.
(c) IIeum is a highly coiled part.
(d) Vermiform appendix arises from duodenum.
(NEET 2020)

2. Match the following structures with their respective location in organs.

(A) Crypts of Lieberkuhn	(i) Pancreas
(B) Glisson's Capsule	(ii) Duodenum
(C) Islets of Langerhans	(iii) Small intestine
(D) Brunner's Glands	(iv) Liver

Select the correct option from the following:

	(A)	(B)	(C)	(D)
(a)	(iii)	(ii)	(i)	(iv)
(b)	(iii)	(i)	(ii)	(iv)
(c)	(ii)	(iv)	(i)	(iii)
(d)	(iii)	(iv)	(i)	(ii)

(NEET 2019)

3. Which of the following terms describes human dentition?
(a) Thecodont, Diphyodont, Homodont
(b) Thecodont, Diphyodont, Heterodont
(c) Pleurodont, Monophyodont, Homodont
(d) Pleurodont, Diphyodont, Heterodont
(NEET 2018)

4. A baby boy aged two years is admitted to play school and passes through a dental check-up. The dentist observed that the boy had twenty teeth. Which teeth were absent?
(a) Canines (b) Pre-molars
(c) Molars (d) Incisors *(NEET 2017)*

5. Which cells of 'Crypts of Lieberkuhn' secrete antibacterial lysozyme?
(a) Paneth cells (b) Zymogen cells
(c) Kupffer cells (d) Argentaffin cells
(NEET 2017)

6. Which hormones do stimulate the production of pancreatic juice and bicarbonate?
(a) Angiotensin and epinephrine
(b) Gastrin and insulin
(c) Cholecystokinin and secretin
(d) Insulin and glucagon *(NEET-II 2016)*

7. Which of the following guards the opening of hepatopancreatic duct into the duodenum?
(a) Pyloric sphincter (b) Sphincter of Oddi
(c) Semilunar valve (d) Ileocaecal valve
(NEET-I 2016)

8. The primary dentition in human differs from permanent dentition in not having one of the following type of teeth.
(a) Molars (b) Incisors
(c) Canines (d) Premolars *(2015)*

9. Where do certain symbiotic microorganisms normally occur in human body?
(a) Caecum
(b) Oral lining and tongue surface
(c) Vermiform appendix and rectum
(d) Duodenum *(Mains 2012)*

10. For its activity, carboxypeptidase requires
(a) zinc (b) iron
(c) niacin (d) copper.
(Mains 2012)

11. One of the constituents of the pancreatic juice which is poured into the duodenum in humans is
(a) trypsinogen (b) chymotrypsin
(c) trypsin (d) enterokinase.
(Mains 2011)

12. Which one of the following correctly represents the normal adult human dental formula?
(a) $\frac{3}{3}, \frac{1}{1}, \frac{3}{2}, \frac{1}{1}$ (b) $\frac{2}{2}, \frac{1}{1}, \frac{3}{2}, \frac{3}{3}$
(c) $\frac{2}{2}, \frac{1}{1}, \frac{2}{2}, \frac{3}{3}$ (d) $\frac{3}{3}, \frac{1}{1}, \frac{3}{3}, \frac{3}{3}$
(Mains 2011)

13. Two friends are eating together on a dining table. One of them suddenly starts coughing while swallowing some food. This coughing would have been due to improper movement of
(a) epiglottis (b) diaphragm
(c) neck (d) tongue. *(2011)*

14. Secretin and cholecystokinin are digestive hormones. They are secreted in
(a) pyloric stomach (b) duodenum
(c) ileum (d) oesophagus. *(2005)*

15. Duodenum has characteristic Brunner's gland which secrete two hormones called
(a) kinase, estrogen
(b) secretin, cholecystokinin
(c) prolactin, parathormone
(d) estradiol, progesterone. *(2004)*

16. Which part of body secretes the hormone secretin?
(a) Stomach (b) Oesophagus
(c) Ileum (d) Duodenum *(1999)*

17. Brunner's glands are present in
(a) stomach (b) oesophagus
(c) ileum (d) duodenum. *(1999)*

18. The layer of cells that secrete enamel of tooth is
(a) osteoblast (b) odontoblast
(c) dentoblast (d) ameloblast. *(1998)*

19. Which one of the factors are required for the maturation of erythrocytes ?
(a) Vitamin B_{12} (b) Vitamin C
(c) Vitamin D (d) Vitamin A *(1998)*

20. In vertebrates, lacteals are found in
(a) oesophagus (b) ear
(c) ileum (d) ischium. *(1998)*

21. Which one of the following vitamins can be synthesized by bacteria inside the gut?
(a) D (b) K
(c) B_1 (d) C *(1997)*

22. A polysaccharide which is synthesized and stored in liver cells is
(a) arabinose (b) glycogen
(c) lactose (d) galactose. *(1995)*

23. Kupffer's cells occur in
(a) spleen (b) kidney
(c) brain (d) liver. *(1993)*

24. Brunner's glands occur in
(a) submucosa of duodenum
(b) submucosa of stomach
(c) mucosa of oesophagus
(d) mucosa of ileum. *(1992)*

25. Pancreas produces
(a) three digestive enzymes and one hormone
(b) three types of digestive enzymes and two hormones
(c) two digestive enzymes and one hormone
(d) three digestive enzymes and no hormone. *(1991)*

26. Pancreatic juice and hormones of pancreas are produced by
(a) same cells
(b) same cells at different times
(c) statment is wrong
(d) different cells. *(1990)*

27. Secretin stimulates production of
(a) saliva
(b) gastric juice
(c) bile
(d) pancreatic juice. *(1990)*

28. Wharton's duct is associated with
(a) sublingual salivary gland
(b) parotid salivary gland
(c) submaxillary salivary gland
(d) Brunner's glands. *(1988)*

29. Duct leading from parotid gland and opening into vestibule is
(a) Haversian duct
(b) Stenson's duct
(c) Wolffian duct
(d) infra-orbital duct *(1988)*

30. Lamina propria is connected with
(a) acini (b) liver
(c) Graafian follicle (d) intestine. *(1988)*

16.2 Digestion of Food

31. The enzyme enterokinase helps in conversion of
(a) protein into polypeptides
(b) trypsinogen into trypsin
(c) caseinogen into casein
(d) pepsinogen into pepsin. *(NEET 2020)*

32. Identify the cells whose secretion protects the lining of gastro-intestinal tract from various enzymes.
(a) Duodenal cells
(b) Chief cells
(c) Goblet cells
(d) Oxyntic cells *(NEET 2019)*

33. Which of the following gastric cells indirectly help in erythropoiesis?
(a) Chief cells
(b) Mucous cells
(c) Goblet cells
(d) Parietal cells *(NEET 2018)*

34. Which of the following options best represents the enzyme composition of pancreatic juice?
(a) Amylase, Pepsin, Trypsinogen, Maltase
(b) Peptidase, Amylase, Pepsin, Rennin
(c) Lipase, Amylase, Trypsinogen, Procarboxypeptidase
(d) Amylase, Peptidase, Trypsinogen, Rennin
(NEET 2017)

35. In the stomach, gastric acid is secreted by the
(a) peptic cells
(b) acidic cells
(c) gastrin secreting cells
(d) parietal cells. *(NEET-I 2016)*

36. The enzyme that is not present in succus entericus is
(a) nucleosidase (b) lipase
(c) maltase (d) nuclease. *(2015)*

37. Gastric juice of infants contains
(a) pepsinogen, lipase, rennin
(b) amylase, rennin, pepsinogen
(c) maltase, pepsinogen, rennin
(d) nuclease, pepsinogen, lipase. *(2015 Cancelled)*

38. Which of the following statements is not correct?
(a) Oxyntic cells are present in the mucosa of stomach and secrete HCl.
(b) Acini are present in the pancreas and secrete carboxypeptidase.
(c) Brunner's glands are present in the submucosa of stomach and secrete pepsinogen.
(d) Goblet cells are present in the mucosa of intestine and secrete mucus. *(2015 Cancelled)*

39. The initial step in the digestion of milk in humans is carried out by
(a) lipase (b) trypsin
(c) rennin (d) pepsin. *(2014)*

40. A healthy person eats the following diet-5 gm raw sugar, 4 gm albumin, 10 gm pure buffalo ghee adultrated with 2 gm vegetable ghee (hydrogenated vegetable oil) and 5 gm lignin. How many calories he is likely to get?
(a) 126 (b) 164
(c) 112 (d) 144
(Karnataka NEET 2013)

41. Which enzymes are likely to act on the baked potatoes eaten by a man, starting from the mouth and as it moves down the alimentary canal?
(a) Pancreatic amylase → Salivary amylase → Lipases
(b) Disaccharidase like maltase → Lipases → Nucleases
(c) Salivary amylase → Pancreatic amylase → Disaccharidases
(d) Salivary maltase → Carboxypeptidase → Trypsinogen *(Karnataka NEET 2013)*

42. If for some reason our goblet cells are non-functional, this will adversely affect
(a) production of somatostatin
(b) secretion of sebum from the sebaceous glands
(c) maturation of sperms
(d) smooth movement of food down the intestine.
(2010)

43. If for some reason the parietal cells of the gut epithelium become partially non-functional, what is likely to happen?
(a) The pancreatic enzymes and specially the trypsin and lipase will not work efficiently.
(b) The pH of stomach will fall abruptly.
(c) Steapsin will be more effective.
(d) Proteins will not be adequately hydrolysed by pepsin into proteoses and peptones.
(Mains 2010)

44. Which one of the following pairs of food components in humans reaches the stomach totally undigested ?
(a) Starch and fat (b) Fat and cellulose
(c) Starch and cellulose (d) Protein and starch
(2009)

45. Which one of the following is the correct matching of the site of action on the given substrate, the enzyme acting upon it and the end product?
(a) Small intestine : Proteins $\xrightarrow{\text{Pepsin}}$ Amino acids
(b) Stomach : Fats $\xrightarrow{\text{Lipase}}$ Micelles
(c) Duodenum : Triglycerides $\xrightarrow{\text{Trypsin}}$ Monoglycerides
(d) Small intestine : Starch $\xrightarrow{\alpha\text{-Amylase}}$ Disaccharide (maltose)
(2008)

46. What will happen if the secretion of parietal cells of gastric glands is blocked with an inhibitor?
(a) In the absence of HCl secretion, inactive pepsinogen is not converted into the active enzyme pepsin.
(b) Enterokinase will not be released from the duodenal mucosa and so trypsinogen is not converted to trypsin.
(c) Gastric juice will be deficient in chymosin.
(d) Gastric juice will be deficient in pepsinogen.
(2008)

47. Hydrolytic enzymes which act on low pH are called as
(a) proteases (b) α-amylases
(c) hydrolases (d) peroxidases. *(2002)*

48. In mammals milk is digested by the action of
(a) rennin (b) amylase
(c) intestinal bacteria (d) invertase. *(2000)*

49. A person who is eating boiled potato, his food contains the component
(a) cellulose which is digested by cellulase
(b) starch which is digested
(c) lactose which is not digested
(d) DNA which can be digested by pancreatic DNase. *(2000)*

50. If pancreas is removed, the compound which remain undigested is
(a) proteins (b) carbohydrates
(c) fats (d) all of these. *(1997)*

51. What is common among amylase, rennin and trypsin?
(a) These are produced in stomach.
(b) These act at a pH lower than 7.
(c) These all are proteins.
(d) These all are proteolytic enzymes. *(1997)*

52. Choose the correct enzyme - substrate pair.
(a) Carbohydrate - Lipase
(b) Maltase - Lactose
(c) Rennin - Casein
(d) Protein - Amylase *(1996)*

53. Which of the following is the function of enterogastrone?
(a) It inhibits the secretion of gastric juice.
(b) It stimulates the secretion of digestive juices in the stomach.
(c) It stimulates the flow of pancreatic juice.
(d) It regulates the flow of bile. *(1994)*

54. Which of the following is correct pairing of site of action and substrate of rennin?
(a) Mouth - Starch
(b) Small intestine - Protein
(c) Stomach - Casein
(d) Stomach - Fat *(1994)*

55. Most of the fat digestion occurs in
(a) rectum (b) stomach
(c) duodenum (d) small intestine. *(1993)*

56. Secretion of gastric juice is stopped by
(a) gastrin (b) pancreozymin
(c) cholecystokinin (d) enterogastrone. *(1993)*

57. Where is protein digestion accomplished?
(a) Stomach (b) Ileum
(c) Rectum (d) Duodenum *(1991)*

58. In man the zymogen or chief cells are mainly found in
(a) cardiac part of stomach
(b) pyloric part of stomach
(c) duodenum
(d) fundic part of stomach. *(1990)*

59. Emulsification of fat is carried out by
(a) bile pigments
(b) bile salts
(c) HCl
(d) pancreatic juice. *(1990)*

60. Release of pancreatic juice is stimulated by
(a) enterokinase (b) cholecystokinin
(c) trypsinogen (d) secretin. *(1989)*

16.3 Absorption of Digested Products

61. Match the items given in column I with those in column II and choose the correct option.

Column I	Column II
A. Rennin	(i) Vitamin B_{12}
B. Enterokinase	(ii) Facilitated transport
C. Oxyntic cells	(iii) Milk proteins
D. Fructose	(iv) Trypsinogen

(a) A-iii, B-iv, C-ii, D-i
(b) A-iv, B-iii, C-i, D-ii
(c) A-iv, B-iii, C-ii, D-i
(d) A-iii, B-iv, C-i, D-ii *(Odisha NEET 2019)*

62. Fructose is absorbed into the blood through mucosa cells of intestine by the process called
(a) active transport
(b) facilitated transport
(c) simple diffusion
(d) co-transport mechanism. *(2014)*

63. Select the correct match of the digested products in humans given in column I with their absorption site and mechanism in column II.

Column I	Column II
(a) Glycerol, fatty acids	Duodenum, move as chylomicrons
(b) Cholesterol, maltose	Large intestine, active absorption
(c) Glycine, glucose	Small intestine, active absorption
(d) Fructose, Na^+	Small intestine, passive absorption

(NEET 2013)

64. Carrier ions like Na^+ facilitate the absorption of substances like
(a) amino acids and glucose
(b) glucose and fatty acids
(c) fatty acids and glycerol
(d) fructose and some amino acids. *(2010)*

65. A young infant may be feeding entirely on mother's milk which is white in colour but the stools which the infant passes out is quite yellowish. What is this yellow colour due to?
(a) Bile pigments passed through bile juice
(b) Undigested milk protein casein
(c) Pancreatic juice poured into duodenum
(d) Intestinal juice *(2009)*

66. Which one of the following statements is true regarding digestion and absorption of food in humans?
(a) Fructose and amino acids are absorbed through intestinal mucosa with the help of carrier ions like Na^+.
(b) Chylomicrons are small lipoprotein particles that are transported from intestine into blood capillaries.
(c) About 60% of starch is hydrolysed by salivary amylase in our mouth.
(d) Oxyntic cells in our stomach secrete the proenzyme pepsinogen. *(2009)*

67. Epithelial cells of the intestine involved in food absorption have on their surface
(a) pinocytic vesicles
(b) microvilli
(c) zymogen granules
(d) phagocytic vesicles. *(2005)*

68. During prolonged fastings, in what sequence are the following organic compounds used up by the body?
(a) First carbohydrates, next fats and lastly proteins
(b) First fats, next carbohydrates and lastly proteins
(c) First carbohydrates, next proteins and lastly lipids
(d) First proteins, next lipids and lastly carbohydrates *(2003)*

16.4 Disorders of Digestive System

69. Anxiety and eating spicy food together in an otherwise normal human, may lead to
(a) indigestion (b) jaundice
(c) diarrhoea (d) vomiting. *(2012)*

70. Jaundice is a disorder of
(a) excretory system (b) skin and eyes
(c) digestive system (d) circulatoy system.
(Mains 2010)

71. When breast feeding is replaced by less nutritive food low in proteins and calories; the infants below the age of one year are likely to suffer from
(a) rickets (b) kwashiorkor
(c) pellagra (d) marasmus. *(2009)*

72. Which one of the following is a fat-soluble vitamin and its related deficiency disease?
(a) Retinol - Xerophthalmia
(b) Cobalamine - Beri-beri
(c) Calciferol - Pellagra
(d) Ascorbic acid - Scurvy *(2007)*

73. Examination of blood of a person suspected of having anaemia shows large, immature, nucleated erythrocytes without haemoglobin.
Supplementing his diet with which of the following is likely to alleviate his symptoms?
(a) Iron compounds
(b) Thiamine
(c) Folic acid and cobalamine
(d) Riboflavin *(2006)*

74. A patient is generally advised to specially consume more meat, lentils, milk and eggs in diet only when he suffers from
(a) scurvy (b) kwashiorkor
(c) rickets (d) anaemia. *(2005)*

75. Which group of three of the following five statements (1-5) contain all three correct statements regarding beri-beri?
1. A crippling disease prevalent among the native population of sub-Saharan Africa.
2. A deficiency disease caused by lack of thiamine (vitamin B_1).
3. A nutritional disorder in infants and young children when the diet is persistently deficient in essential protein.
4. Occurs in those countries where the staple diet is polished rice.
5. The symptoms are pain from neuritis, paralysis, muscle wasting, progressive oedema, mental deterioration and finally heart failure.

(a) 2, 4 and 5 (b) 1, 2 and 4
(c) 1, 3 and 5 (d) 2, 3 and 5 *(2005)*

76. The richest sources of vitamin B_{12} are
(a) goat's liver and *Spirulina*
(b) chocolate and green gram
(c) rice and hen's egg
(d) carrot and chicken's breast. *(2004)*

77. Which one of the following pairs is not correctly matched?
(a) Vitamin B_{12} - Pernicious anaemia
(b) Vitamin B_6 - Convulsions
(c) Vitamin B_1 - Beri-beri
(d) Vitamin B_2 - Pellagra *(2004)*

78. Which one of the following pairs is not correctly matched ?
(a) Vitamin C - Scurvy
(b) Vitamin B_2 - Pellagra
(c) Vitamin B_{12} - Pernicious anaemia
(d) Vitamin B_6 - Beri-beri *(2003)*

79. Stool of a person is whitish grey coloured due to malfunction of which of the following organ?
(a) Pancreas (b) Spleen
(c) Kidney (d) Liver *(2002)*

80. Continuous bleeding from an injured part of body is due to deficiency of
(a) vitamin A (b) vitamin B
(c) vitamin K (d) vitamin E. *(2002)*

81. Which one of the following is correctly matched?
(a) Vitamin E - Tocopherol
(b) Vitamin D - Riboflavin
(c) Vitamin B - Calciferol
(d) Vitamin A - Thiamine *(2001)*

82. Which food should be eaten during deficiency of rhodopsin in eyes?
(a) Carrot and ripe papayas
(b) Guava, banana
(c) Mango and potato
(d) None of the above *(2000)*

83. To which of the following families do folic acid and pantothenic acid belong?
(a) Vitamin C (b) Vitamin B complex
(c) Vitamin K (d) Vitamin A *(1999)*

84. Which of the following is mismatched?
(a) Vitamin A - Xerophthalmia
(b) Vitamin D - Rickets
(c) Vitamin K - Beri-beri
(d) Vitamin C - Scurvy *(1999)*

85. Which one of the following is a protein deficiency disease?
(a) Kwashiorkor (b) Night blindness
(c) Eczema (d) Cirrhosis *(1998)*

86. Pellagra disease is caused by the deficiency of
(a) niacin (b) tocopherol
(c) riboflavin (d) folic acid. *(1996)*

87. High cholesterol patients are advised to use
(a) ghee, butter and oils
(b) groundnut oil, margarine and vegetable oils
(c) fatty oil and butter
(d) cheese, dalda and ghee. *(1996)*

88. The haemorrhagic disease of new born is caused due to the deficiency of
(a) vitamin K (b) vitamin B_{12}
(c) vitamin A (d) vitamin B_1. *(1995)*

89. The vitamin C or ascorbic acid prevents
(a) scurvy (b) antibody synthesis
(c) rickets (d) pellagra. *(1995)*

90. Calcium deficiency in the body occurs in the absence of
(a) vitamin C (b) vitamin D
(c) vitamin B (d) vitamin E. *(1994)*

91. Prolonged deficiency of nicotinic acid causes
(a) pellagra (b) xerophthalmia
(c) osteomalacia (d) anaemia. *(1994)*

92. Which of the following pair is characterised by swollen lips, thick pigmented skin of hands and legs and irritability?
(a) Thiamine – Beri-beri
(b) Protein – Kwashiorkor
(c) Nicotinamide – Pellagra
(d) Iodine – Goitre *(1993)*

ANSWER KEY

1.	(c)	**2.**	(d)	**3.**	(b)	**4.**	(b)	**5.**	(a)	**6.**	(c)	**7.**	(b)	**8.**	(d)	**9.**	(a)	**10.**	(a)
11.	(a)	**12.**	(c)	**13.**	(a)	**14.**	(b)	**15.**	(b)	**16.**	(d)	**17.**	(d)	**18.**	(d)	**19.**	(a)	**20.**	(c)
21.	(c)	**22.**	(b)	**23.**	(d)	**24.**	(a)	**25.**	(b)	**26.**	(d)	**27.**	(d)	**28.**	(c)	**29.**	(b)	**30.**	(d)
31.	(b)	**32.**	(c)	**33.**	(d)	**34.**	(c)	**35.**	(d)	**36.**	(d)	**37.**	(a)	**38.**	(c)	**39.**	(c)	**40.**	(d)
41.	(c)	**42.**	(d)	**43.**	(d)	**44.**	(b)	**45.**	(d)	**46.**	(a)	**47.**	(a)	**48.**	(a)	**49.**	(b)	**50.**	(d)
51.	(c)	**52.**	(c)	**53.**	(a)	**54.**	(c)	**55.**	(d)	**56.**	(d)	**57.**	(b)	**58.**	(d)	**59.**	(b)	**60.**	(b,d)
61.	(d)	**62.**	(b)	**63.**	(c)	**64.**	(a)	**65.**	(a)	**66.**	(a)	**67.**	(b)	**68.**	(a)	**69.**	(a)	**70.**	(c)
71.	(d)	**72.**	(a)	**73.**	(c)	**74.**	(b)	**75.**	(a)	**76.**	(a)	**77.**	(d)	**78.**	(b,d)	**79.**	(d)	**80.**	(c)
81.	(a)	**82.**	(a)	**83.**	(b)	**84.**	(c)	**85.**	(a)	**86.**	(a)	**87.**	(b)	**88.**	(a)	**89.**	(a)	**90.**	(b)
91.	(a)	**92.**	(c)																