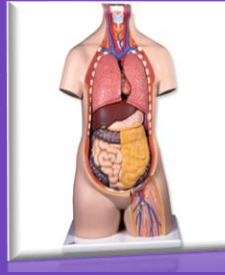


Biology Grade 9 unit one practice questions

Prepared by WeAnswer Tutors



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### Practice questions on Unit 3 – Human Biology and Health

🚦 Carbohydrates, Protein, Fats and Oils will be covered in detail in our grade 11 practice questions. For this chapter we will focus on the rest part.

1. Which of the following is NOT a major nutrient needed by the human body?
  - A) Carbohydrates
  - B) Vitamins
  - C) Proteins
  - D) Fats
  
2. What are the main sources of vitamins and minerals needed by the human body?
  - A) Fruits and vegetables
  - B) Meat and dairy products
  - C) Grains and legumes
  - D) All of the above
  
3. Which of the following is a micronutrient?
  - A) Carbohydrates
  - B) Proteins
  - C) Minerals
  - D) Fats
  
4. Carbohydrates provide energy primarily in the form of:
  - A) Sucrose
  - B) Glucose
  - C) Maltose
  - D) Fructose



5. Excess carbohydrate intake in the body is converted into:
- A) Protein
  - B) Vitamins
  - C) Fat
  - D) Minerals
6. Which of the following is a storage carbohydrate in plants?
- A) Glycogen
  - B) Sucrose
  - C) Starch
  - D) Cellulose
7. Which type of carbohydrate is found mainly in muscle and liver tissue in animals?
- A) Starch
  - B) Cellulose
  - C) Glycogen
  - D) Sucrose
8. What is the main constituent of plant cell walls?
- A) Starch
  - B) Glycogen
  - C) Sucrose
  - D) Cellulose

9. Which carbohydrate cannot be digested by humans?
- A) Starch
  - B) Sucrose
  - C) Maltose
  - D) Cellulose
10. Which chemical reaction results in the formation of a double sugar and a molecule of water?
- A) Photosynthesis
  - B) Hydrolysis
  - C) Condensation
  - D) Oxidation
11. Which of the following is NOT a mineral needed in the human diet?
- A) Calcium
  - B) Vitamin C
  - C) Sodium
  - D) Iron
12. What deficiency disease is associated with a lack of calcium in the diet?
- A) Beri-beri
  - B) Rickets
  - C) Scurvy
  - D) Night blindness
13. What is the role of iron in the body?

- A) Making bones and teeth
- B) Helping with cell respiration
- C) Forming the connective tissue
- D) Making haemoglobin in red blood cells

14. What deficiency disease results from a lack of iron in the diet?

- A) Rickets
- B) Beri-beri
- C) Scurvy
- D) Anaemia

15. What mineral is needed for the proper functioning of the nervous system?

- A) Calcium
- B) Sodium
- C) Iron
- D) Phosphorus

16. What can excessive salt intake lead to in some individuals?

- A) Rickets
- B) Beri-beri
- C) Scurvy
- D) High blood pressure

17. Which vitamin is needed for the formation of the connective tissue?

- A) Vitamin A

- B) Vitamin B1
- C) Vitamin C
- D) Vitamin D

18. What deficiency disease results from a lack of vitamin A?

- A) Night blindness
- B) Beri-beri
- C) Rickets
- D) Scurvy

19. What vitamin is needed for bones to absorb calcium?

- A) Vitamin A
- B) Vitamin B1
- C) Vitamin C
- D) Vitamin D

20. What deficiency disease results from a lack of vitamin D?

- A) Night blindness
- B) Beri-beri
- C) Rickets
- D) Scurvy

21. Which vitamin is produced in the skin upon exposure to sunlight?

- A) Vitamin A
- B) Vitamin B1

C) Vitamin C

D) Vitamin D

22. What type of vitamins are soluble in water?

A) Vitamin A and D

B) Vitamin B1 and C

C) Vitamin C and D

D) Vitamin A and B1

23. What type of vitamins are fat-soluble?

A) Vitamin A and D

B) Vitamin B1 and C

C) Vitamin C and D

D) Vitamin A and B1

24. Which vitamin is important for cellular respiration?

A) Vitamin A

B) Vitamin B1

C) Vitamin C

D) Vitamin D

25. What deficiency disease results from a lack of vitamin B1?

A) Night blindness

B) Beri-beri

C) Rickets

D) Scurvy

26. What is the approximate percentage of water in the human body?

A) 40-50%

B) 50-60%

C) 60-70%

D) 70-80%

27. Which of the following is NOT a function of water in the body?

A) Acting as a solvent for chemical reactions

B) Transporting substances in the blood

C) Aiding in temperature regulation

D) Providing energy for cellular respiration

28. What is the role of fibre in the diet?

A) Providing energy for the body

B) Assisting in muscle growth

C) Absorbing water and aiding in digestion

D) Preventing mineral deficiencies

29. Why is a balanced diet important for overall health?

A) It prevents dehydration

B) It ensures adequate muscle growth

C) It provides the necessary energy and nutrients for bodily functions

D) It promotes rapid weight loss





30. What is the consequence of undernutrition?
- A) Obesity
  - B) Malnutrition
  - C) Overnutrition
  - D) Dehydration
31. How do energy needs vary among individuals?
- A) They depend on the individual's age and gender
  - B) They depend solely on an individual's occupation
  - C) They are consistent for all individuals regardless of factors like age and gender
  - D) They depend on the individual's ethnicity
32. Which of the following statements about exercise and energy expenditure is true?
- A) Exercise does not significantly affect energy needs
  - B) More exercise results in a decreased need for food
  - C) Exercise leads to decreased muscle mass
  - D) Exercise increases the body's energy needs
33. What is the primary cause of obesity in developed countries?
- A) Lack of access to nutritious foods
  - B) Genetic predisposition
  - C) Overeating high-energy fatty foods
  - D) Sedentary lifestyle

34. Which of the following daily menus represents a balanced diet?

- A) Breakfast: Pancakes with syrup; Lunch: Cheeseburger and fries; Dinner: Pizza
- B) Breakfast: Cereal with milk; Lunch: Salad with grilled chicken; Dinner: Baked salmon with vegetables
- C) Breakfast: Donuts and coffee; Lunch: Fried chicken with mashed potatoes; Dinner: Fast food burger
- D) Breakfast: Bacon and eggs; Lunch: French fries; Dinner: Pasta with creamy sauce

35. What is the consequence of consistently consuming more food than the body needs?

- A) Weight loss
- B) Undernutrition
- C) Malnutrition
- D) Obesity

36. What percentage of daily energy needs is typically used for basic bodily functions?

- A) 5-10%
- B) 15-20%
- C) 25-30%
- D) 60-75%

37. What is the formula for calculating BMI (Body Mass Index)?

- A)  $BMI = \text{weight} \times \text{height}$
- B)  $BMI = \text{weight} / \text{height}$
- C)  $BMI = \text{weight} + \text{height}$
- D)  $BMI = \text{weight} / (\text{height})^2$

38. What BMI range is considered healthy for most individuals?
- A) Below 15
  - B) 15-20
  - C) 20-30
  - D) Above 30
39. Which group of individuals requires the highest daily energy intake?
- A) Newborn babies
  - B) Adolescent boys
  - C) Elderly women
  - D) Female office workers
40. What health problems can arise from having a BMI below 18.5 or above 35?
- A) Obesity
  - B) Malnutrition
  - C) Undernutrition
  - D) Real health problems
41. Which of the following is NOT part of a balanced diet?
- A) carbohydrates
  - B) proteins
  - C) cellulose
  - D) lipids
42. Which of the following molecules are the building blocks of proteins?

- A) monosaccharides
- B) glycerol
- C) fatty acids
- D) amino acids

43. Which of the following groups are classed as macronutrients?

- A) proteins, minerals, vitamins
- B) carbohydrates, proteins, fats
- C) fats, fibre, folic acid
- D) carbohydrates, proteins, milk

44. Vitamin A is also known as:

- A) tocopherol
- B) retinol
- C) ascorbic acid
- D) calciferol

45. In what type of reaction do fatty acids and glycerol join together to form lipids?

- A) hydrolysis
- B) condensation
- C) reduction
- D) oxidation

46. A student carried out a Benedict's test on an unknown food sample and the blue liquid turned orange when it was heated. What food substance was present?

- A) protein

- B) starch
- C) simple sugar
- D) lipid

47. Which of the following will NOT cause obesity, even if you eat very large amounts of it in your diet?

- A) fat
- B) fibre
- C) carbohydrate
- D) protein

48. What is nutrition? It is

- A) Getting food simply to prevent from hunger
- B) Getting food only from macronutrients
- C) Obtaining food only from micronutrients
- D) Obtaining food to carry out life processes

49. Which of the following statements is true about hypertension? It

- A) Is a deficiency disease caused by lack of iron.
- B) Can be managed by reducing salt in the diet.
- C) Is due to the presence of few RBC to carry haemoglobin.
- D) Can be reduced during higher age and overweight of body

50. What is balanced diet? It is a diet which contains enough of

- A) Proteins and carbohydrates
- B) Amino acids and vitamins
- C) Vitamin and minerals

- D) All major food groups.
51. What are the two main components of the digestive system?
- A) Brain and spinal cord
  - B) Mouth and esophagus
  - C) Physical and chemical breakdown
  - D) Liver and pancreas
52. What is the role of enzymes in digestion?
- A) Providing energy
  - B) Breaking down food into smaller molecules
  - C) Absorbing nutrients
  - D) Transporting waste products
53. Which enzyme begins the digestion of starch in the mouth?
- A) Protease
  - B) Lipase
  - C) Carbohydrase
  - D) Maltase
54. What is the function of the salivary glands?
- A) Produce bile
  - B) Produce stomach acid
  - C) Produce digestive enzymes
  - D) Produce saliva containing amylase



55. What protects the muscle walls of the stomach from being digested by protease enzymes?

- A) Mucus
- B) Enamel
- C) Dentine
- D) Pulp cavity

56. Where are the main protease enzymes produced?

- A) Liver
- B) Gall bladder
- C) Stomach
- D) Pancreas

57. What is the main function of bile in digestion?

- A) Neutralize stomach acid
- B) Break down proteins
- C) Emulsify fats
- D) Digest carbohydrates

58. Which enzyme breaks down fats into fatty acids and glycerol?

- A) Lipase
- B) Protease
- C) Carbohydase
- D) Maltase

59. How are the digested food molecules absorbed into the bloodstream?

- A) Through the walls of the large intestine
- B) Through the villi and microvilli of the small intestine
- C) Through the walls of the stomach
- D) Through the liver

60. What is the purpose of peristalsis in the digestive system?

- A) Breaking down food
- B) Absorbing nutrients
- C) Mixing food with digestive enzymes
- D) Moving food along the digestive tract

61. Which enzyme breaks down proteins in the stomach?

- A) Lipase
- B) Pepsin
- C) Amylase
- D) Maltase

62. What is the function of the sphincter at the lower end of the esophagus?

- A) Produce bile
- B) Control the flow of food into the stomach
- C) Produce digestive enzymes
- D) Absorb nutrients

63. Where are carbohydrase enzymes produced?



- A) Stomach
  - B) Liver
  - C) Salivary glands
  - D) Pancreas
64. What is the pH of the stomach environment where protease enzymes work best?
- A) Neutral
  - B) Acidic
  - C) Alkaline
  - D) Basic
65. Which part of the small intestine absorbs digested food molecules?
- A) Duodenum
  - B) Ileum
  - C) Colon
  - D) Rectum
66. What is the function of villi in the small intestine?
- A) Secrete digestive enzymes
  - B) Increase surface area for absorption
  - C) Mix food with digestive juices
  - D) Prevent backflow of food
67. What causes constipation?
- A) Too much water in the feces

- B) Lack of fiber in the diet
  - C) Excessive intake of fruits and vegetables
  - D) High protein diet
68. How is food moved along the digestive tract?
- A) By diffusion
  - B) By osmosis
  - C) By peristalsis
  - D) By active transport
69. What is the role of the liver in digestion?
- A) Produces bile
  - B) Produces insulin
  - C) Produces saliva
  - D) Produces enzymes
70. What causes diarrhea?
- A) Lack of water intake
  - B) Excessive fiber in the diet
  - C) Infection or inflammation of the gut
  - D) High-fat diet
71. Which of the following is NOT a food-borne disease?
- A) Salmonella
  - B) Botulism

- C) Scurvy
  - D) E. coli
72. What is the purpose of emulsification of fats by bile?
- A) Break down carbohydrates
  - B) Increase surface area for enzyme action
  - C) Neutralize stomach acid
  - D) Absorb nutrients
73. What does the term "assimilation" refer to in digestion?
- A) Absorption of nutrients
  - B) Physical breakdown of food
  - C) Chemical breakdown of food
  - D) Removal of waste products
74. How does food move from the mouth to the stomach?
- A) By swallowing
  - B) By diffusion
  - C) By peristalsis
  - D) By active transport
75. What is the function of microvilli in the small intestine?
- A) Increase surface area for absorption
  - B) Secrete digestive enzymes
  - C) Produce bile

D) Mix food with digestive juices

76. What is the primary function of the large intestine?

A) Absorb water and salts

B) Break down proteins

C) Produce bile

D) Absorb nutrients

77. What is the purpose of chewing food in the mouth?

A) Break down fats

B) Break down proteins

C) Break down carbohydrates

D) Increase surface area for absorption

78. Which of the following is NOT a function of the stomach?

A) Digest proteins

B) Absorb nutrients

C) Store food temporarily

D) Mix food with digestive enzymes

79. What is the pH of the small intestine where most digestion occurs?

A) Acidic

B) Alkaline

C) Neutral

D) Basic



80. Which organ produces insulin to regulate blood sugar levels?

- A) Liver
- B) Pancreas
- C) Gall bladder
- D) Stomach

81. What is the purpose of the pancreas in digestion?

- A) Produce bile
- B) Produce insulin and digestive enzymes
- C) Absorb nutrients
- D) Store bile

82. What is the role of the gall bladder in digestion?

- A) Produce bile
- B) Produce insulin
- C) Produce digestive enzymes
- D) Absorb nutrients

83. What is the function of the esophagus in digestion?

- A) Produce bile
- B) Absorb nutrients
- C) Break down food
- D) Transport food to the stomach

84. What is the function of the rectum in digestion?
- A) Absorb water and salts
  - B) Produce bile
  - C) Store and expel feces
  - D) Absorb nutrients
85. What is the purpose of the enzyme amylase in digestion?
- A) Break down proteins
  - B) Break down fats
  - C) Break down carbohydrates
  - D) Absorb nutrients
86. What is the role of the mucus lining in the stomach?
- A) Absorb water
  - B) Produce bile
  - C) Protect the stomach wall from acid
  - D) Break down proteins
87. What is the purpose of the enzyme lipase in digestion?
- A) Break down proteins
  - B) Break down fats
  - C) Break down carbohydrates
  - D) Absorb nutrients
88. What is the function of the sphincter at the lower end of the stomach?

- A) Control the flow of food into the small intestine
- B) Produce bile
- C) Mix food with digestive enzymes
- D) Absorb nutrients

89. What is the function of the colon in digestion?

- A) Absorb water and salts
- B) Break down proteins
- C) Produce bile
- D) Absorb nutrients

90. What is the role of gastric juices in digestion?

- A) Neutralize stomach acid
- B) Break down carbohydrates
- C) Break down proteins
- D) Absorb nutrients

91. What is the purpose of bile in digestion?

- A) Neutralize stomach acid
- B) Break down carbohydrates
- C) Emulsify fats
- D) Absorb nutrients

92. Which part of the digestive system absorbs water and salts from undigested food?

- A) Small intestine

B) Large intestine

C) Stomach

D) Esophagus

93. What is the function of the pyloric sphincter?

A) Control the flow of food into the small intestine

B) Produce bile

C) Mix food with digestive enzymes

D) Absorb nutrients

94. What is the function of the appendix in the digestive system?

A) Store bile

B) Absorb nutrients

C) Aid in immune function

D) Produce digestive enzymes

95. What is the function of the enzyme maltase?

A) Break down proteins

B) Break down fats

C) Break down carbohydrates

D) Absorb nutrients

96. What is the role of the enzyme lactase?

A) Break down proteins

B) Break down fats

C) Break down carbohydrates



- D) Absorb nutrients
97. What is the purpose of the enzyme protease in digestion?
- A) Break down proteins
  - B) Break down fats
  - C) Break down carbohydrates
  - D) Absorb nutrients
98. What is the function of the enzyme sucrase?
- A) Break down proteins
  - B) Break down fats
  - C) Break down carbohydrates
  - D) Absorb nutrients
99. What is the function of the enzyme peptidase?
- A) Break down proteins
  - B) Break down fats
  - C) Break down carbohydrates
  - D) Absorb nutrients
100. What is the role of the enzyme nuclease?
- A) Break down proteins
  - B) Break down fats
  - C) Break down nucleic acids
  - D) Absorb nutrients
101. What term describes the process of removing undigested food from the body?
- A) Egestion
  - B) Absorption

- C) Assimilation
- D) Excretion

102. Which of the following is NOT a component of the watery mixture left in the small intestine after absorption?

- A) Enzymes
- B) Undigested food
- C) Bile pigments
- D) Water

103. What is the primary function of the large intestine?

- A) Absorption of nutrients
- B) Emulsification of fats
- C) Removal of excess water
- D) Secretion of digestive enzymes

104. Which of the following conditions can result from faeces remaining in the large intestine for too long?

- A) Constipation
- B) Diarrhoea
- C) Gastritis
- D) Ulcerative colitis

105. What is the recommended action for treating constipation?

- A) Eating more fibre
- B) Drinking less water

- C) Avoiding laxatives
- D) Exercising less frequently

106. Which condition is characterized by loose, watery faeces?

- A) Constipation
- B) Diarrhoea
- C) Haemorrhoids
- D) Diverticulitis

107. What is a common cause of diarrhoea?

- A) Lack of fibre in the diet
- B) Excessive water intake
- C) Bacterial infection
- D) Consuming too much protein

108. How can food-borne diseases be prevented?

- A) Eating raw meat and eggs
- B) Washing hands before eating
- C) Storing raw meat with salad vegetables
- D) Disinfecting work surfaces irregularly

109. What is the primary purpose of food preservation methods?

- A) To enhance flavor
- B) To prevent bacterial growth
- C) To increase nutritional value

D) To reduce cooking time

110. What precaution should be taken when using canned or packaged foods?

- A) Storing them in a warm environment
- B) Eating food past its "best before" date
- C) Checking for damaged packaging
- D) Leaving opened containers uncovered

111. Enzymes are made of:

- A) carbohydrates
- B) vitamins
- C) proteins
- D) fats

112. Which of the following does NOT affect the activity of an enzyme?

- A) pH
- B) temperature
- C) the surface area of the reactants
- D) light levels

113. Extracellular enzymes work:

- A) outside of your cells
- B) inside your cells
- C) inside your mitochondria

D) only in your mouth

114. Which part of a tooth contains the living nerves?

A) enamel

B) dentine

C) cement

D) pulp cavity

115. The finger-like projections in the small intestine are known as:

A) bilirubin

B) microvilli

C) sphincters

D) villi

116. What is the importance of breathing in humans?

A) Provides energy for the body

B) Removes waste gases

C) Supports vocalization

D) Prevents dehydration

117. What structure supports the trachea and holds it open?

A) Smooth muscle

B) Solid cartilage rings

C) Cilia

D) Diaphragm

118. Which of the following is NOT a function of mucus in the trachea?

- A) Collects bacteria and dust particles
- B) Moves trapped micro-organisms towards the lungs
- C) Digests swallowed food
- D) Prevents pathogens from entering the lungs

119. How does the trachea adapt to facilitate swallowing?

- A) It contracts to expel food particles
- B) It contains solid cartilage rings
- C) It secretes enzymes to break down food
- D) It has incomplete rings of cartilage that allow flexibility

120. What is the role of cilia in the trachea?

- A) Absorbing nutrients
- B) Filtering air
- C) Supporting cartilage rings
- D) Producing mucus

121. Which part of the respiratory system divides into bronchioles?

- A) Trachea
- B) Larynx
- C) Bronchi
- D) Alveoli

122. What is the function of the bronchioles?
- A) Exchange gases
  - B) Support the lungs
  - C) Transport oxygenated blood
  - D) Carry air to the alveoli
123. Where does gas exchange primarily occur in the lungs?
- A) Bronchi
  - B) Alveoli
  - C) Trachea
  - D) Bronchioles
124. How is air brought into the lungs during inhalation?
- A) Diaphragm contracts and ribs move up
  - B) Diaphragm relaxes and ribs move down
  - C) Ribs contract and diaphragm relaxes
  - D) Ribs relax and diaphragm contracts
125. What causes the pressure inside the chest to decrease during inhalation?
- A) Contraction of intercostal muscles
  - B) Relaxation of diaphragm
  - C) Expansion of chest cavity
  - D) Compression of alveoli
126. What muscles are used during forced exhalation?

- A) External intercostal muscles
- B) Diaphragm muscles
- C) Internal intercostal muscles
- D) Abdominal muscles

127. What is the term for the movement of air in and out of the lungs?

- A) Circulation
- B) Ventilation
- C) Respiration
- D) Oxygenation

128. Where does gaseous exchange primarily occur?

- A) Trachea
- B) Bronchi
- C) Alveoli
- D) Bronchioles

129. What is the main mechanism of gas exchange in the alveoli?

- A) Active transport
- B) Osmosis
- C) Diffusion
- D) Filtration

130. What factors contribute to efficient gas exchange in the alveoli?

- A) Large surface area and short diffusion distances



- B) Thick mucus layer and narrow capillaries
- C) High pressure and low blood supply
- D) Long diffusion distances and sparse blood vessels

131. Which gas is primarily responsible for the exchange of gases in the alveoli?

- A) Nitrogen
- B) Oxygen
- C) Carbon dioxide
- D) Hydrogen

132. What is the approximate composition of exhaled air in terms of oxygen, nitrogen, and carbon dioxide?

- A) 21% oxygen, 80% nitrogen, 0.04% carbon dioxide
- B) 16% oxygen, 80% nitrogen, 4% carbon dioxide
- C) 80% oxygen, 21% nitrogen, 0.04% carbon dioxide
- D) 80% nitrogen, 21% oxygen, 4% carbon dioxide

133. Which gas is NOT exchanged during respiration?

- A) Oxygen
- B) Nitrogen
- C) Carbon dioxide
- D) Hydrogen

134. What is the primary function of the diaphragm during breathing?

- A) Pumping blood
- B) Protecting the lungs

- C) Increasing pressure in the chest cavity
- D) Contracting and relaxing to facilitate inhalation and exhalation

135. How does cigarette smoking affect the respiratory system?

- A) Decreases mucus production
- B) Increases lung capacity
- C) Damages cilia and increases mucus production
- D) Improves gas exchange efficiency

136. What is the purpose of the rings of cartilage in the trachea?

- A) To prevent the collapse of the trachea
- B) To enhance gas exchange
- C) To support the vocal cords
- D) To aid in digestion

137. Which of the following statements about the mechanism of breathing is true?

- A) Exhalation increases the volume of the chest cavity
- B) Inhalation decreases the pressure inside the chest
- C) Exhalation involves the relaxation of intercostal muscles
- D) Inhalation involves the relaxation of the diaphragm

138. What is the role of the larynx in the respiratory system?

- A) Filtering air
- B) Gas exchange
- C) Vocalization

D) Digestion

139. Which muscles are primarily responsible for expanding the chest cavity during inhalation?

- A) Diaphragm and intercostal muscles
- B) Abdominal muscles
- C) Laryngeal muscles
- D) Tracheal muscles

140. What is the significance of the incomplete cartilage rings in the trachea?

- A) They facilitate swallowing
- B) They prevent the entry of pathogens
- C) They allow flexibility for movement during swallowing
- D) They support the vocal cords

141. Which of the following factors affect breathing?

- A) Temperature only
- B) Altitude only
- C) Exercise only
- D) Temperature, altitude, and exercise

142. How does the body ensure efficient gas exchange in the alveoli?

- A) By increasing the thickness of the alveolar membrane
- B) By decreasing the surface area of the alveoli
- C) By reducing blood supply to the lungs
- D) By maintaining short diffusion distances and a rich blood supply

143. What is the role of the bronchi in the respiratory system?

- A) Exchange gases in the lungs
- B) Support the trachea
- C) Transport air to and from the lungs
- D) Produce mucus to filter air

144. What happens to the pressure inside the chest during exhalation?

- A) It increases
- B) It decreases
- C) It remains constant
- D) It fluctuates

145. What adaptations of the alveoli contribute to efficient gas exchange?

- A) Small surface area and long diffusion distances
- B) Rich blood supply and thick mucus layer
- C) Large surface area and short diffusion distances
- D) Sparse blood vessels and narrow capillaries

146. Which of the following factors does NOT contribute to efficient gas exchange in the alveoli?

- A) Large surface area
- B) Short diffusion distances
- C) Rich blood supply
- D) Sparse blood vessels

147. What role do the bronchioles play in the respiratory system?

- A) Transport air to and from the lungs
- B) Exchange gases in the alveoli
- C) Support the trachea
- D) Produce mucus to filter air

148. How does the diaphragm contribute to breathing?

- A) By pumping blood
- B) By protecting the lungs
- C) By contracting and relaxing to change chest volume
- D) By supporting the trachea

149. What is the primary function of the trachea?

- A) Gas exchange
- B) Vocalization
- C) Airway passage
- D) Food digestion

150. What is the primary function of the cilia in the trachea?

- A) Producing mucus
- B) Supporting cartilage rings
- C) Filtering air and moving particles away from the lungs
- D) Contracting to change air pressure

151. How are oxygen and nutrients primarily transported in the blood?

- A) Through diffusion
- B) Via active transport
- C) By simple circulation
- D) Through the circulatory system

152. Which structures of the heart are responsible for pumping blood?

- A) Atria
- B) Ventricles
- C) Coronary arteries
- D) Valves

153. What is the function of the pulmonary circulation?

- A) To pump blood to the body
- B) To exchange oxygen and carbon dioxide with the air in the lungs
- C) To supply oxygenated blood to the heart
- D) To remove waste material from the body

154. How many types of blood vessels are there in the human body?

- A) One
- B) Two
- C) Three
- D) Four

155. Which blood vessels carry blood away from the heart?

- A) Arteries

- B) Veins
- C) Capillaries
- D) Venules

156. What is the main function of arteries?

- A) To carry deoxygenated blood
- B) To carry blood towards the heart
- C) To facilitate gas exchange
- D) To carry blood away from the heart

157. What color is the blood usually found in veins?

- A) Bright red
- B) Deep purple-red
- C) Blue
- D) Yellow

158. Which blood vessels have the thickest walls?

- A) Arteries
- B) Veins
- C) Capillaries
- D) Venules

159. What is the role of capillaries in the circulatory system?

- A) To carry blood towards the heart
- B) To carry blood away from the heart

- C) To exchange substances with tissues
- D) To regulate blood pressure

160. Which of the following is a component of the blood?

- A) Hormones
- B) Nerves
- C) Cartilage
- D) Enzymes

161. What are the components of the blood primarily responsible for transporting oxygen?

- A) White blood cells
- B) Platelets
- C) Red blood cells
- D) Plasma

162. What are the four blood groups?

- A) A, B, C, D
- B) I, II, III, IV
- C) O, P, Q, R
- D) A, B, AB, O

163. Which blood group is considered the universal donor?

- A) A
- B) B
- C) AB



D) O

164. What is the compatibility of blood group AB?

- A) Can receive blood from any group
- B) Can donate blood to any group
- C) Can receive blood only from group AB
- D) Can donate blood only to group AB

165. What is the cause of anaemia?

- A) High blood pressure
- B) Low red blood cell count
- C) Excessive bleeding
- D) Elevated blood sugar levels

166. How is blood pressure measured?

- A) In millimeters of mercury (mmHg)
- B) In milliliters per minute (ml/min)
- C) In centimeters of water (cmH<sub>2</sub>O)
- D) In grams per deciliter (g/dL)

167. Which component of blood pressure represents the heart's contraction phase?

- A) Systolic
- B) Diastolic
- C) Atrial
- D) Ventricular



168. What is the normal blood pressure reading for a healthy adult?

- A) 100/70 mmHg
- B) 120/80 mmHg
- C) 140/90 mmHg
- D) 160/100 mmHg

169. How does the heart respond to physical exercise?

- A) By slowing down
- B) By decreasing blood flow
- C) By increasing heart rate and stroke volume
- D) By constricting blood vessels

170. Which type of muscle is unique to the heart?

- A) Skeletal muscle
- B) Smooth muscle
- C) Voluntary muscle
- D) Cardiac muscle

171. What is the function of the coronary arteries?

- A) To supply blood to the heart muscle
- B) To regulate blood pressure
- C) To carry blood to the lungs
- D) To exchange oxygen and carbon dioxide

172. What is the main role of the valves in the heart?

- A) To pump blood
- B) To prevent backflow of blood
- C) To regulate blood pressure
- D) To exchange gases

173. Which side of the heart pumps blood to the lungs?

- A) Right side
- B) Left side
- C) Upper side
- D) Lower side

174. What is the primary function of the atria in the heart?

- A) To receive blood from the body
- B) To pump blood to the body
- C) To carry blood away from the heart
- D) To exchange gases

175. During which phase of the cardiac cycle does the heart relax and fill with blood?

- A) Systole
- B) Diastole
- C) Atrial contraction
- D) Ventricular contraction

176. What sound of the heartbeat is produced by the opening and closing of heart valves?

- A) Murmur
- B) Systole
- C) Diastole
- D) Lub-dub

177. How does physical exercise affect the heart rate?

- A) It decreases heart rate
- B) It has no effect on heart rate
- C) It increases heart rate
- D) It stops heart rate

178. Which blood vessels carry oxygenated blood away from the heart?

- A) Pulmonary arteries
- B) Pulmonary veins
- C) Aorta
- D) Vena cava

179. What is the primary function of the pulmonary circulation?

- A) To pump blood to the body
- B) To exchange oxygen and carbon dioxide with the air in the lungs
- C) To carry blood to the liver
- D) To remove waste material from the body

180. What is the primary function of the systemic circulation?

- A) To pump blood to the lungs

- B) To carry blood around the body
- C) To exchange gases in the alveoli
- D) To regulate blood pressure

181. How does the structure of arteries differ from veins?

- A) Arteries have thinner walls
- B) Arteries carry blood towards the heart
- C) Arteries have valves
- D) Arteries carry deoxygenated blood

182. What is the main function of capillaries?

- A) To carry blood away from the heart
- B) To pump blood to the lungs
- C) To exchange substances with tissues
- D) To regulate blood pressure

183. Which blood component is primarily responsible for transporting oxygen?

- A) Red blood cells
- B) White blood cells
- C) Platelets
- D) Plasma

184. What are the four main blood groups?

- A) A, B, AB, O
- B) X, Y, Z, W

- C) I, II, III, IV
- D) Alpha, Beta, Gamma, Delta

185. Which blood group is considered the universal donor?

- A) A
- B) B
- C) AB
- D) O

186. What is the normal range for systolic blood pressure?

- A) 60-90 mmHg
- B) 90-120 mmHg
- C) 120-140 mmHg
- D) 140-160 mmHg

187. What is the primary function of cardiac muscle?

- A) To control voluntary movements
- B) To pump blood throughout the body
- C) To line the digestive tract
- D) To regulate body temperature

188. What structure prevents the backflow of blood in veins?

- A) Valves
- B) Arteries
- C) Capillaries

D) Ventricles

189. Which chamber of the heart receives oxygenated blood from the lungs?

A) Right atrium

B) Right ventricle

C) Left atrium

D) Left ventricle

190. What is the function of the coronary arteries?

A) To pump blood to the lungs

B) To supply blood to the heart muscle

C) To exchange gases in the alveoli

D) To regulate blood pressure

191. What sound is produced by the closing of heart valves?

A) Murmur

B) Systole

C) Lub

D) Dub

192. Which side of the heart pumps blood to the body?

A) Right side

B) Left side

C) Upper side

D) Lower side



193. During which phase of the cardiac cycle does the heart contract and pump blood out?

- A) Systole
- B) Diastole
- C) Atrial contraction
- D) Ventricular relaxation

194. What is the primary function of the atria in the heart?

- A) To receive blood from the body
- B) To pump blood to the body
- C) To carry blood away from the heart
- D) To exchange gases

195. Which blood vessels carry deoxygenated blood towards the heart?

- A) Pulmonary arteries
- B) Pulmonary veins
- C) Aorta
- D) Vena cava

196. What is the primary function of the pulmonary circulation?

- A) To pump blood to the body
- B) To exchange oxygen and carbon dioxide with the air in the lungs
- C) To carry blood to the liver
- D) To remove waste material from the body



197. What is the primary function of the systemic circulation?

- A) To pump blood to the lungs
- B) To carry blood around the body
- C) To exchange gases in the alveoli
- D) To regulate blood pressure

198. How does the structure of arteries differ from veins?

- A) Arteries have thinner walls
- B) Arteries carry blood towards the heart
- C) Arteries have valves
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199. What is the main function of capillaries?

- A) To carry blood away from the heart
- B) To pump blood to the lungs
- C) To exchange substances with tissues
- D) To regulate blood pressure

200. Which blood component is primarily responsible for transporting oxygen?

- A) Red blood cells
- B) White blood cells
- C) Platelets
- D) Plasma

201. What is the main function of the heart and blood vessels in the human body?

- A) Absorption of nutrients
- B) Carrying oxygen to cells
- C) Producing hormones
- D) Storing excess water

202. Which component of blood is responsible for carrying carbon dioxide back to the lungs?

- A) Red blood cells
- B) White blood cells
- C) Platelets
- D) Plasma

203. What is the function of haemoglobin in red blood cells?

- A) Fighting infections
- B) Transporting oxygen
- C) Clotting blood
- D) Producing antibodies

204. What happens to haemoglobin in high oxygen concentration areas?

- A) It forms oxyhaemoglobin
- B) It breaks down into carbon dioxide
- C) It becomes inactive
- D) It transforms into white blood cells

205. Where are red blood cells produced in the body?

- A) Liver

- B) Spleen
- C) Bone marrow
- D) Kidneys

206. Why do mature red blood cells lack a nucleus?

- A) To increase their lifespan
- B) To carry more haemoglobin
- C) To allow for easier diffusion
- D) To enhance their ability to fight infections

207. What shape do red blood cells typically have?

- A) Spherical
- B) Cuboidal
- C) Biconcave discs
- D) Irregular polygons

208. What is the function of white blood cells in the body?

- A) Carrying oxygen
- B) Transporting nutrients
- C) Defending against microbes
- D) Clotting blood

209. What are platelets important for in the blood?

- A) Carrying oxygen
- B) Preventing anaemia

- C) Clotting at wound sites
- D) Transporting hormones

210. Which blood group has both antigens A and B on red blood cells?

- A) Group A
- B) Group B
- C) Group AB
- D) Group O

211. What is the consequence of mixing incompatible blood groups during a transfusion?

- A) Improved oxygen transport
- B) Enhanced immune response
- C) Agglutination of red blood cells
- D) Increased platelet count

212. What can happen if someone with blood group O receives blood from someone with blood group A?

- A) Blood clotting
- B) Enhanced immune response
- C) Agglutination of red blood cells
- D) Improved oxygen transport

213. What is a common cause of anaemia mentioned in the text?

- A) Excessive salt intake
- B) Lack of iron in the diet
- C) Overconsumption of red meat

D) Sedentary lifestyle

214. Who is more likely to suffer from anaemia according to the text?

A) Men

B) Women

C) Children

D) Elderly people

215. Which condition is characterized by high blood pressure?

A) Anaemia

B) Hypertension

C) Leukemia

D) Thrombosis

216. What is considered normal blood pressure?

A) Systolic pressure below 120 mmHg

B) Diastolic pressure below 140 mmHg

C) Systolic pressure above 140 mmHg

D) Diastolic pressure above 90 mmHg

217. Which factor is NOT a potential cause of hypertension?

A) Sedentary lifestyle

B) Genetic predisposition

C) Excessive vitamin intake

D) Chronic kidney diseases

218. What is the main method for managing hypertension through lifestyle adjustments?

- A) Increasing salt intake
- B) Reducing alcohol consumption
- C) Avoiding physical activity
- D) Smoking cessation

219. Which medication increases urination to reduce blood volume and lower blood pressure?

- A) Diuretics
- B) Antibiotics
- C) Analgesics
- D) Antihistamines

220. What is a long-term consequence of untreated hypertension?

- A) Increased risk of heart attacks and strokes
- B) Reduced risk of kidney diseases
- C) Enhanced cognitive function
- D) Improved overall health

221. What is the primary function of the body's transport system?

- A) Respiration
- B) Digestion
- C) Circulation
- D) Excretion

222. Which blood component is responsible for defending against microbes?

- A) Plasma
- B) Red blood cells
- C) White blood cells
- D) Platelets

223. What is the role of platelets in the blood?

- A) Transporting nutrients
- B) Clotting at wound sites
- C) Carrying oxygen
- D) Fighting infections

224. Which blood group has no antigens on red blood cells?

- A) Group A
- B) Group B
- C) Group AB
- D) Group O

225. What can occur if blood from incompatible groups is mixed during a transfusion?

- A) Improved oxygen transport
- B) Immune system suppression
- C) Clotting of blood vessels
- D) Increased blood volume

226. What is a common cause of anaemia?

- A) Lack of vitamin C
- B) Excessive iron intake
- C) Sedentary lifestyle
- D) Overconsumption of red meat

227. Who is more susceptible to anaemia?

- A) Men
- B) Women
- C) Elderly individuals
- D) Adolescents

228. Which condition is characterized by high blood pressure?

- A) Anaemia
- B) Leukemia
- C) Hypertension
- D) Thrombosis

229. What is considered normal blood pressure?

- A) Systolic pressure above 140 mmHg
- B) Diastolic pressure below 90 mmHg
- C) Systolic pressure below 120 mmHg
- D) Diastolic pressure above 140 mmHg

230. Which factor is NOT a potential cause of hypertension?

- A) Sedentary lifestyle



- B) Genetic predisposition
- C) Chronic kidney diseases
- D) Adequate physical activity

Answer Key

1. **Answer: B) Vitamins**

Explanation: Vitamins are essential organic compounds required by the body in small amounts for various physiological functions. While they are important for health, they are not classified as major nutrients like carbohydrates, proteins, and fats.

2. **Answer: D) All of the above**

Explanation: Vitamins and minerals can be sourced from a variety of foods including fruits, vegetables, meat, dairy products, grains, and legumes.

3. **Answer: C) Minerals**

Explanation: Minerals are micronutrients required by the body for good health. They are inorganic compounds and include substances such as calcium, iron, and potassium.

4. **Answer: B) Glucose**

Explanation: Glucose is the primary form of energy used by cells in cellular respiration. It is a simple sugar derived from the breakdown of carbohydrates.

5. **Answer: C) Fat**

Explanation: Excess carbohydrate intake is converted into fat and stored in the body for future energy use.

6. **Answer: C) Starch**

Explanation: Starch is a storage carbohydrate in plants, commonly found in foods like potatoes and grains.

7. **Answer: C) Glycogen**

Explanation: Glycogen is referred to as "animal starch" and is the primary carbohydrate energy store found in animals, mainly in muscle and liver tissue.

8. **Answer: D) Cellulose**

Explanation: Cellulose is the main constituent of plant cell walls, providing structural support to plant cells.

9. **Answer: D) Cellulose**

Explanation: Cellulose, a complex carbohydrate, cannot be digested by humans because they lack the necessary enzymes to break down its complex structure.

10. **Answer: C) Condensation**

Explanation: Condensation reaction results in the formation of a double sugar (disaccharide) by joining two simple sugars together, accompanied by the release of a molecule of water.

**11. Answer: B) Vitamin C**

Explanation: Vitamin C is not a mineral; it is a vitamin. Minerals are inorganic compounds required by the body for various physiological functions.

**12. Answer: B) Rickets**

Explanation: Rickets is a deficiency disease caused by a lack of calcium in the diet, leading to soft and weak bones, particularly in children.

**13. Answer: D) Making haemoglobin in red blood cells**

Explanation: Iron is vital for the production of haemoglobin in red blood cells, which carries oxygen throughout the body.

**14. Answer: D) Anaemia**

Explanation: Anaemia is a deficiency disease resulting from a lack of iron in the diet, leading to a decrease in the number of red blood cells or the amount of haemoglobin in the blood.

**15. Answer: B) Sodium**

Explanation: Sodium is needed for the proper functioning of the nervous system and maintaining fluid levels in the body.

**16. Answer: D) High blood pressure**

Explanation: Excessive salt intake can lead to high blood pressure in some individuals, increasing the risk of heart disease, stroke, and kidney problems.

**17. Answer: C) Vitamin C**

Explanation: Vitamin C is needed for the formation of connective tissue, which helps hold the body together.

**18. Answer: A) Night blindness**

Explanation: Night blindness is a deficiency disease caused by a lack of vitamin A, leading to impaired vision in low light conditions.

**19. Answer: D) Vitamin D**

Explanation: Vitamin D is needed for bones to absorb calcium, promoting bone health and preventing conditions like rickets.



**20. Answer: C) Rickets**

Explanation: Rickets is a deficiency disease resulting from a lack of vitamin D, leading to soft and weak bones, particularly in children.

**21. Answer: D) Vitamin D**

Explanation: Vitamin D is produced in the skin upon exposure to sunlight, providing a natural source of this vitamin.

**22. Answer: B) Vitamin B1 and C**

Explanation: Vitamin B1 (thiamine) and vitamin C are water-soluble vitamins, meaning they dissolve in water and are not stored in the body for long periods.

**23. Answer: A) Vitamin A and D**

Explanation: Vitamin A and D are fat-soluble vitamins, meaning they dissolve in fats and are stored in the body's fatty tissues.

**24. Answer: B) Vitamin B1**

Explanation: Vitamin B1 (thiamine) is important for cellular respiration, aiding in the conversion of carbohydrates into energy for cells.

**25. Answer: B) Beri-beri**

Explanation: Beri-beri is a deficiency disease resulting from a lack of vitamin B1, leading to muscle wasting and paralysis.

**26. Answer C) 60-70%**

Explanation: Water makes up a significant portion of the human body, typically ranging from 60% to 70%.

**27. Answer A) Providing structure to cells**

Explanation: Water plays a crucial role in providing structure to cells and is a vital solvent for various chemical reactions in the body.

**28. Answer C) Absorbing water and aiding in digestion**

Explanation: Fibre, though indigestible, absorbs water in the digestive tract, aiding in the passage of food through the gut and preventing constipation.

**29. Answer D) It provides the necessary energy and nutrients for bodily functions**

Explanation: A balanced diet ensures that the body receives all essential nutrients and energy required for optimal health and functioning.



**30. Answer B) Malnutrition**

Explanation: Malnutrition results from insufficient intake of food or essential nutrients, leading to health issues and deficiencies.

**31. Answer D) They depend on the individual's age and gender**

Explanation: Energy needs vary based on factors such as age, gender, activity level, and metabolic rate.

**32. Answer C) It increases energy needs**

Explanation: Exercise increases the body's energy demands as muscles require additional energy for physical activity and recovery.

**33. Answer D) Overeating high-energy fatty foods**

Explanation: Overconsumption of high-energy fatty foods is a common cause of obesity in developed countries, leading to weight gain and related health issues.

**34. Answer B) Breakfast: Cereal with milk; Lunch: Salad with grilled chicken; Dinner: Baked salmon with vegetables**

Explanation: This meal plan includes a variety of food groups and provides a balanced mix of nutrients.

**35. Answer D) Obesity**

Explanation: Consistently consuming more calories than the body needs leads to weight gain and obesity, increasing the risk of various health problems.

**36. Answer D) 60-75%**

Explanation: A significant portion of daily energy needs, ranging from 60% to 75%, is utilized in basic metabolic reactions to sustain life.

**37. Answer D)  $BMI = \text{weight} / (\text{height})^2$**

Explanation: Body Mass Index (BMI) is calculated by dividing a person's weight in kilograms by the square of their height in meters.

**38. Answer C) 20-30**

Explanation: A BMI between 20 and 30 is generally considered healthy for most individuals, indicating a normal weight range.

**39. Answer B) Adolescent boys**

Explanation: Adolescents, especially boys, typically experience growth spurts and higher energy needs during puberty due to rapid growth and development.



**40. Answer D) Real health problems**

Explanation: Having a BMI below 18.5 or above 35 may lead to significant health problems, including cardiovascular issues, metabolic disorders, and increased risk of chronic diseases.

**41. Answer: C) cellulose**

Explanation: Cellulose is a type of dietary fiber found in plant cell walls. While it is important for digestive health, it is not considered one of the major nutrients required in a balanced diet.

**42. Answer: D) amino acids**

Explanation: Amino acids are the building blocks of proteins. Proteins are essential macronutrients that play crucial roles in various bodily functions such as growth, repair, and enzyme production.

**43. Answer: B) carbohydrates, proteins, fats**

Explanation: Macronutrients are nutrients required by the body in large amounts to provide energy and support various physiological functions. Carbohydrates, proteins, and fats are classified as macronutrients.

**44. Answer: B) retinol**

Explanation: Vitamin A is also known as retinol. It is a fat-soluble vitamin that is essential for vision, immune function, and skin health.

**45. Answer: B) condensation**

Explanation: Fatty acids and glycerol join together to form lipids (such as triglycerides) through a condensation reaction. In this reaction, a molecule of water is released as the two molecules combine.

**46. Answer: C) simple sugar**

Explanation: The Benedict's test is used to detect the presence of reducing sugars, such as simple sugars (monosaccharides) and some disaccharides. The change in color from blue to orange indicates the presence of a reducing sugar.

**47. Answer: B) fibre**

Explanation: Dietary fiber, also known as roughage, is a type of carbohydrate found in plant foods. While it is important for digestive health and can contribute to a feeling of fullness, it does not typically lead to obesity, even when consumed in large amounts.

**48. Answer: D) Obtaining food to carry out life processes**

Explanation: Nutrition refers to the process of obtaining food and utilizing it for energy, growth, maintenance, and other life processes. It involves the intake of nutrients from food sources to support overall health and well-being, including the functioning of bodily systems and organs.

**49. Answer: B) Can be managed by reducing salt in the diet.**

Explanation: Hypertension, or high blood pressure, is a condition characterized by elevated blood pressure levels. One way to manage hypertension is by reducing salt intake in the diet, as excess salt can contribute to increased blood pressure. Other lifestyle changes, such as maintaining a healthy weight and exercising regularly, can also help manage hypertension.

**50. Answer: D) All major food groups.**

Explanation: A balanced diet is one that contains adequate amounts of nutrients from all major food groups, including proteins, carbohydrates, fats, vitamins, and minerals. This ensures that the body receives the necessary nutrients for optimal health and functioning. A balanced diet promotes overall well-being and reduces the risk of nutritional deficiencies and related health problems.

**48. Answer: B) Mouth and esophagus**

Explanation: The digestive system consists of the alimentary canal, which includes the mouth and esophagus, and accessory organs such as the liver, pancreas, and gallbladder.

**49. Answer: B) Breaking down food into smaller molecules**

Explanation: Enzymes aid in the breakdown of food into smaller, more absorbable molecules during digestion.

**50. Answer: C) Carbohydrase**

Explanation: Carbohydrase enzymes, such as amylase, begin the digestion of starches in the mouth.

**51. Answer: D) Produce saliva containing amylase**

Explanation: The salivary glands produce saliva containing the enzyme amylase, which begins the digestion of carbohydrates in the mouth.

**52. Answer: A) Mucus**

Explanation: Mucus protects the stomach walls from being digested by the acidic environment and protease enzymes.

**53. Answer: D) Pancreas**

Explanation: The main protease enzymes, such as pepsin, are produced in the stomach, while others like trypsin and chymotrypsin are produced in the pancreas.

**54. Answer: C) Emulsify fats**

Explanation: Bile, produced by the liver and stored in the gallbladder, emulsifies fats to increase their surface area for digestion by lipase enzymes.

**55. Answer: A) Lipase**

Explanation: Lipase enzymes break down fats into fatty acids and glycerol during digestion.

**56. Answer: B) Through the villi and microvilli of the small intestine**

Explanation: Digested food molecules are absorbed into the bloodstream through the villi and microvilli lining the walls of the small intestine.

**57. Answer: D) Moving food along the digestive tract**

Explanation: Peristalsis is the involuntary muscle contraction that moves food along the digestive tract.

**61. Answer: B) Pepsin**

Explanation: Pepsin is the enzyme responsible for breaking down proteins in the stomach. It is secreted by the gastric glands in its inactive form, pepsinogen, which is activated by the acidic environment of the stomach.

**62. Answer: B) Control the flow of food into the stomach**

Explanation: The sphincter at the lower end of the esophagus, known as the lower esophageal sphincter (LES) or cardiac sphincter, controls the flow of food into the stomach by opening and closing to allow food to pass into the stomach and prevent the backflow of stomach contents into the esophagus.

**63. Answer: D) Pancreas**

Explanation: Carbohydrase enzymes, such as amylase, are primarily produced in the pancreas. These enzymes aid in the digestion of carbohydrates by breaking them down into simpler sugars like glucose.

**64. Answer: B) Acidic**

Explanation: The pH of the stomach environment is highly acidic, typically around 1.5 to 3.5. This acidic environment is essential for the optimal function of protease enzymes like pepsin, which break down proteins into smaller peptides.

**65. Answer: B) Ileum**





Explanation: The ileum is the final section of the small intestine where absorption of digested food molecules primarily occurs. It is lined with specialized structures called villi and microvilli, which increase its surface area for efficient absorption of nutrients.

**66. Answer: B) Increase surface area for absorption**

Explanation: Villi are finger-like projections in the lining of the small intestine that increase its surface area, facilitating greater absorption of nutrients from digested food into the bloodstream.

**67. Answer: B) Lack of fiber in the diet**

Explanation: Constipation is often caused by a lack of fiber in the diet, which results in difficulty passing stool. Fiber adds bulk to the stool, making it easier to pass through the digestive tract.

**68. Answer: C) By peristalsis**

Explanation: Peristalsis is the rhythmic, wave-like contractions of muscles in the digestive tract that propel food forward from the mouth to the anus.

**69. Answer: A) Produces bile**

Explanation: The liver plays a crucial role in digestion by producing bile, which is stored in the gallbladder and released into the small intestine to aid in the digestion and absorption of fats.

**70. Answer: C) Infection or inflammation of the gut**

Explanation: Diarrhea can be caused by various factors, including infections, inflammation of the gastrointestinal tract, food intolerances, or certain medications. It results in frequent and watery bowel movements.

**71. Answer: C) Scurvy**

Explanation: Scurvy is caused by a deficiency of vitamin C and is not typically considered a food-borne disease. It results in symptoms such as weakness, anemia, gum disease, and skin problems.

**72. Answer: B) Increase surface area for enzyme action**

Explanation: Emulsification of fats by bile helps to break down large fat globules into smaller droplets, increasing the surface area available for the action of lipase enzymes, which then further digest fats into fatty acids and glycerol.

**73. Answer: A) Absorption of nutrients**

Explanation: Assimilation refers to the process by which digested nutrients are absorbed into the bloodstream and utilized by the body's cells for energy, growth, and repair.

**74. Answer: A) By swallowing**

Explanation: Food is moved from the mouth to the stomach by swallowing, which involves the coordinated action of muscles in the mouth, throat, and esophagus.

**75. Answer: A) Increase surface area for absorption**

Explanation: Microvilli are tiny, hair-like structures found on the surface of cells lining the small intestine. They further increase the surface area available for absorption of nutrients by maximizing contact between digested food and the absorptive cells.

**76. Answer: A) Absorb water and salts**

Explanation: The primary function of the large intestine is to absorb water and electrolytes from undigested food material, forming solid feces for elimination.

**77. Answer: C) Break down carbohydrates**

Explanation: Chewing food in the mouth helps to mechanically break down carbohydrates, as well as fats and proteins, into smaller particles, increasing the surface area for enzymatic digestion.

**78. Answer: B) Absorb nutrients**

Explanation: While the stomach does play a role in the digestion of proteins and some lipid-soluble substances, its primary functions are to store food temporarily, mix it with gastric juices, and initiate the digestion of proteins.

**79. Answer: B) Alkaline**

Explanation: The pH of the small intestine is typically alkaline, ranging from 7.0 to 8.5, which provides an optimal environment for the activity of digestive enzymes produced by the pancreas and small intestine.

**80. Answer: B) Pancreas**

Explanation: The pancreas produces insulin, a hormone that regulates blood sugar levels by facilitating the uptake of glucose into cells for energy or storage. Insulin helps to maintain blood glucose within a normal range.

**81. Answer: B) Produce insulin and digestive enzymes**

Explanation: The pancreas plays a crucial role in digestion by producing digestive enzymes (such as amylase, lipase, and proteases) that aid in the breakdown of

carbohydrates, fats, and proteins. Additionally, the pancreas produces insulin, a hormone that regulates blood sugar levels.

**82. Answer: A) Produce bile**

Explanation: The gallbladder stores and concentrates bile, which is produced by the liver. Bile is released into the small intestine to emulsify fats, making them easier to digest and absorb.

**83. Answer: D) Transport food to the stomach**

Explanation: The esophagus is a muscular tube that transports food from the mouth to the stomach through a series of coordinated muscle contractions called peristalsis. It does not play a direct role in digestion but facilitates the movement of food to the stomach.

**84. Answer: C) Store and expel feces**

Explanation: The rectum is the final section of the large intestine where feces are stored until they are expelled from the body through the anus during defecation. It primarily functions in the elimination phase of digestion.

**85. Answer: C) Break down carbohydrates**

Explanation: Amylase is an enzyme that breaks down carbohydrates (specifically starches) into simpler sugars like maltose. It is produced in various locations in the body, including the salivary glands and pancreas, and aids in the digestion of carbohydrates in the mouth and small intestine.

**86. Answer: C) Protect the stomach wall from acid**

Explanation: The mucus lining in the stomach forms a protective barrier that helps prevent the stomach wall from being damaged by the acidic gastric juices. It also lubricates the stomach lining, facilitating the movement of food.

**87. Answer: B) Break down fats**

Explanation: Lipase is an enzyme that breaks down fats (lipids) into fatty acids and glycerol. It is produced in the pancreas and released into the small intestine to aid in the digestion and absorption of fats.

**88. Answer: A) Control the flow of food into the small intestine**

Explanation: The pyloric sphincter is a muscular valve located at the lower end of the stomach that regulates the passage of partially digested food (chyme) into the small intestine. It helps to control the rate of gastric emptying and prevents the backflow of intestinal contents into the stomach.

**89. Answer: A) Absorb water and salts**

Explanation: The colon, or large intestine, primarily functions in the absorption of water and electrolytes from undigested food material. It also plays a role in the formation and storage of feces before elimination.

**90. Answer: C) Break down proteins**

Explanation: Gastric juices secreted by the stomach contain hydrochloric acid and enzymes such as pepsin, which break down proteins into smaller peptides. These juices also help to denature proteins, making them more accessible to enzymatic digestion.

**91. Answer: C) Emulsify fats**

Explanation: Bile, produced by the liver and stored in the gallbladder, emulsifies fats in the small intestine, breaking them down into smaller droplets to increase the efficiency of fat digestion by lipase enzymes.

**92. Answer: B) Large intestine**

Explanation: The large intestine, specifically the colon, is responsible for absorbing water and salts from undigested food material, as well as storing feces before elimination.

**93. Answer: A) Control the flow of food into the small intestine**

Explanation: The pyloric sphincter is located at the lower end of the stomach and regulates the passage of partially digested food (chyme) into the small intestine. It helps to control the rate of gastric emptying and ensures that chyme is released in a controlled manner for further digestion and absorption.

**94. Answer: C) Aid in immune function**

Explanation: The appendix is a small pouch located at the junction of the small and large intestines. While its exact function in digestion is not well understood, it is believed to play a role in immune function, as it contains lymphatic tissue that helps fight infection and regulate immune responses.

**95. Answer: C) Break down carbohydrates**

Explanation: Maltase is an enzyme that breaks down maltose (a disaccharide) into two glucose molecules. It is produced in the small intestine and aids in the final stages of carbohydrate digestion, facilitating the absorption of glucose into the bloodstream.



**96. Answer: C) Break down carbohydrates**

Explanation: Lactase is an enzyme that breaks down lactose (a disaccharide found in dairy products) into glucose and galactose. It is produced in the small intestine and is necessary for the digestion of lactose-containing foods.

**97. Answer: A) Break down proteins**

Explanation: Protease enzymes, including pepsin in the stomach and various proteases in the small intestine, break down proteins into smaller peptides and amino acids, which can then be absorbed and utilized by the body.

**98. Answer: C) Break down carbohydrates**

Explanation: Sucrase is an enzyme that breaks down sucrose (table sugar) into glucose and fructose. It is produced in the small intestine and facilitates the digestion of sucrose-containing foods.

**99. Answer: A) Break down proteins**

Explanation: Peptidase enzymes, found in the small intestine, further break down peptides (short chains of amino acids) into individual amino acids, which can then be absorbed into the bloodstream for use by the body.

**100. Answer: C) Break down nucleic acids**

Explanation: Nucleases are enzymes that break down nucleic acids (DNA and RNA) into nucleotides. They play a role in the digestion of nucleic acids from ingested food and the recycling of nucleic acids from cellular turnover.

**101. Answer: A) Egestion**

Explanation: Egestion is the process of eliminating undigested food, mainly consisting of cellulose, dead cells, mucus, and bile pigments, from the body through the rectum and anus. It is distinct from excretion, which involves the removal of waste products from the cells.

**102. Answer: A) Enzymes**

Explanation: Enzymes are involved in the process of digestion and are not typically present in the watery mixture left in the small intestine after absorption. This mixture mainly consists of undigested food, bile pigments, dead cells, and mucus.

**103. Answer: C) Removal of excess water**

Explanation: The primary function of the large intestine is to absorb water from the undigested food material passing through it. This absorption process helps in the formation of faeces by consolidating the waste material.



104. Answer: A) Constipation

Explanation: Constipation occurs when faeces remain in the large intestine for an extended period, leading to excessive water absorption and the formation of dry, hard stools that are difficult to pass.

105. Answer: A) Eating more fibre

Explanation: Eating more fibre can help alleviate constipation by adding bulk to the stool and promoting regular bowel movements. Fibre helps to soften the stool and stimulate the muscles of the intestine.

106. Answer: B) Diarrhoea

Explanation: Diarrhoea is a condition characterized by the frequent passage of loose, watery stools. It is often caused by infections, dietary factors, or underlying medical conditions.

107. Answer: C) Bacterial infection

Explanation: Bacterial infections, such as those caused by pathogens like Salmonella or Escherichia coli, are common causes of diarrhoea. These infections can result from consuming contaminated food or water.

108. Answer: B) Washing hands before eating

Explanation: Washing hands before eating is an essential hygiene practice that can help prevent food-borne diseases. Proper hand hygiene reduces the risk of transferring harmful bacteria from hands to food, thereby preventing contamination.

109. Answer: B) To prevent bacterial growth

Explanation: The primary purpose of food preservation methods is to prevent bacterial growth and spoilage by creating conditions unfavorable for microbial growth. Preservation methods such as canning, refrigeration, and drying help extend the shelf life of food.

110. Answer: C) Checking for damaged packaging

Explanation: When using canned or packaged foods, it is important to check for damaged packaging to ensure the integrity of the product. Damaged packaging can allow air and microbes to enter, increasing the risk of spoilage and contamination.

111. Answer C) proteins

Explanation: Enzymes are biological catalysts that speed up chemical reactions in living organisms. They are typically composed of proteins, which are made up of amino acids. While some enzymes may require non-protein components called cofactors (such as vitamins or minerals) for their activity, the main structural component of enzymes is protein.

112. Answer D) light levels

Explanation: Enzyme activity can be influenced by various factors including pH, temperature, and the concentration of substrates and inhibitors. However, light levels generally do not have a significant impact on enzyme activity, as enzymes primarily function through interactions with substrates and cofactors in biochemical reactions.

113. Answer A) outside of your cells

Explanation: Extracellular enzymes are enzymes that function outside of the cells that produce them. They are secreted into the extracellular environment where they catalyze chemical reactions on substrates present outside of the cell. Examples of extracellular enzymes include digestive enzymes secreted by the pancreas into the digestive tract.

114. Answer D) pulp cavity

Explanation: The pulp cavity is the innermost part of the tooth and contains the dental pulp, which consists of connective tissue, blood vessels, and nerves. It is the living part of the tooth and is responsible for providing nutrients and sensation to the tooth.

115. Answer D) villi

Explanation: Villi are finger-like projections that line the inner surface of the small intestine. They greatly increase the surface area available for absorption of nutrients from digested food. Each villus contains blood vessels and a lacteal (a lymphatic capillary) to absorb nutrients into the bloodstream.

116. Answer: B) Removes waste gases

Explanation: Breathing in humans is important for removing waste gases, such as carbon dioxide, from the body. Oxygen is taken in during inhalation, which is essential for cellular respiration, while carbon dioxide is expelled during exhalation as a waste product.

117. Answer: B) Solid cartilage rings

Explanation: The trachea is supported by incomplete rings of cartilage, shaped like the letter C, which hold it open. These cartilage rings provide support to the trachea while allowing flexibility for movement during swallowing.

118. Answer: D) Prevents pathogens from entering the lungs



Explanation: Mucus in the trachea collects bacteria and dust particles, and the cilia on the lining of the trachea move the mucus along with any trapped microorganisms and dirt away from the lungs towards the mouth. This helps prevent pathogens from entering the lungs and causing infections.

119. Answer: D) It has incomplete rings of cartilage that allow flexibility for movement during swallowing

Explanation: The trachea has incomplete rings of cartilage to allow flexibility for movement during swallowing. These incomplete rings prevent discomfort when food passes down the esophagus next to the trachea.

120. Answer: C) Filtering air and moving particles away from the lungs

Explanation: Cilia in the trachea are hair-like structures that move in a coordinated manner to sweep mucus and trapped particles, including bacteria and dust, away from the lungs towards the mouth. This helps in filtering air and maintaining respiratory hygiene.

121. Answer: C) Bronchi

Explanation: The bronchi are the structures in the respiratory system that divide from the trachea and lead to each lung. They further divide into smaller tubes known as bronchioles, which eventually lead to the alveoli.

122. Answer: D) Carry air to the alveoli

Explanation: Bronchioles are small air tubes in the lungs that branch off from the bronchi. Their function is to carry air to the alveoli, which are the primary sites of gas exchange in the lungs.

123. Answer: B) Alveoli

Explanation: Gas exchange primarily occurs in the alveoli, which are tiny air sacs in the lungs. They provide a large surface area for the exchange of oxygen and carbon dioxide between the air in the lungs and the blood in the capillaries.

124. Answer: A) Diaphragm contracts and ribs move up

Explanation: During inhalation, the diaphragm contracts and flattens, while the external intercostal muscles contract, causing the ribs to move up and out. These movements increase the volume of the chest cavity, leading to air being drawn into the lungs.

125. Answer: C) Expansion of chest cavity

Explanation: During inhalation, the expansion of the chest cavity leads to a decrease in pressure inside the chest. This decrease in pressure creates a pressure gradient between the lungs and the atmosphere, causing air to flow into the lungs.



126. Answer: C) Internal intercostal muscles

Explanation: During forced exhalation, or when additional force is needed to expel air from the lungs, the internal intercostal muscles contract. These muscles pull the ribs down and inward, further reducing the volume of the chest cavity and forcing air out of the lungs.

127. Answer: B) Ventilation

Explanation: The movement of air in and out of the lungs is known as ventilation. It includes both inhalation and exhalation processes that enable the exchange of gases between the lungs and the atmosphere.

128. Answer: C) Alveoli

Explanation: Gaseous exchange primarily occurs in the alveoli, where oxygen from the air diffuses into the bloodstream and carbon dioxide diffuses out of the bloodstream into the air in the lungs.

129. Answer: C) Diffusion

Explanation: The mechanism of gas exchange in the alveoli primarily relies on diffusion. Oxygen and carbon dioxide move across the thin walls of the alveoli and capillaries, driven by differences in their concentrations.

130. Answer: A) Large surface area and short diffusion distances

Explanation: Efficient gas exchange in the alveoli is facilitated by their large surface area, which provides ample space for diffusion, and short diffusion distances, which allow gases to move quickly between the air and the bloodstream.

131. Answer: B) Oxygen

Explanation: The primary gas responsible for gas exchange in the alveoli is oxygen. Oxygen diffuses from the alveoli into the bloodstream, where it binds to hemoglobin in red blood cells for transport to tissues.

132. Answer: B) 16% oxygen, 80% nitrogen, 4% carbon dioxide

Explanation: Inhaled air typically contains approximately 21% oxygen, while exhaled air contains around 16% oxygen, as some of the oxygen is utilized during cellular respiration. The composition of exhaled air also includes a higher percentage of carbon dioxide (around 4%) compared to inhaled air.

133. Answer: B) Nitrogen

Explanation: While nitrogen is present in both inhaled and exhaled air, it is not exchanged during respiration. Nitrogen makes up a significant portion of the air we breathe but does not participate in the gas exchange process in the lungs.

134. Answer: D) Contracting and relaxing to facilitate inhalation and exhalation

Explanation: The diaphragm is a dome-shaped muscle located below the lungs that plays a crucial role in breathing. It contracts and flattens during inhalation, increasing the volume of the chest cavity and drawing air into the lungs. Conversely, it relaxes and returns to its dome shape during exhalation, reducing the volume of the chest cavity and expelling air from the lungs.

135. Answer: C) Damages cilia and increases mucus production

Explanation: Cigarette smoking can damage the cilia in the respiratory tract, impairing their ability to sweep mucus and trapped particles out of the lungs. This can lead to increased mucus production and a buildup of toxins, contributing to respiratory problems such as chronic bronchitis and emphysema.

136. Answer: A) To prevent the collapse of the trachea

Explanation: The rings of cartilage in the trachea provide structural support and help prevent the collapse of the trachea during breathing. They maintain the patency of the airway, ensuring that airflow to and from the lungs is not obstructed.

137. Answer: A) Exhalation involves the relaxation of the diaphragm

Explanation: During exhalation, the diaphragm relaxes and returns to its dome-shaped position, while the external intercostal muscles relax, allowing the ribs to move downward and inward. These movements decrease the volume of the chest cavity, increasing the pressure within the lungs and causing air to be expelled.

138. Answer: C) Vocalization

Explanation: The larynx, or voice box, is responsible for vocalization. It contains the vocal cords, which vibrate when air passes over them, producing sound. The larynx also plays a role in preventing food and drink from entering the airway during swallowing.

139. Answer: A) Diaphragm and intercostal muscles

Explanation: The expansion of the chest cavity during inhalation is primarily achieved by the contraction of the diaphragm, which flattens and moves downward, and the external intercostal muscles, which lift the ribs upward and outward. These muscles work together to increase the volume of the thoracic cavity, allowing air to enter the lungs.

140. Answer: D) They support the vocal cords

Explanation: The incomplete rings of cartilage in the trachea provide structural support and help maintain the patency of the airway. They are shaped like the letter C, with the open part facing the esophagus to accommodate the passage of food. Additionally, they provide support to the vocal cords, allowing for vocalization.

141. Answer: D) Temperature, altitude, and exercise

Explanation: Various factors can affect breathing, including temperature, altitude, and exercise. Changes in temperature can impact respiratory rate and the body's demand for oxygen, while altitude can affect the availability of oxygen. Exercise increases the demand for oxygen and may lead to changes in breathing patterns to meet the body's needs.

142. Answer: D) By maintaining short diffusion distances and a rich blood supply

Explanation: Efficient gas exchange in the alveoli is facilitated by maintaining short diffusion distances between the alveolar air and the bloodstream. This ensures that gases can rapidly diffuse across the thin alveolar walls. Additionally, the alveoli have a rich blood supply, allowing for the exchange of gases with the bloodstream.

143. Answer: C) Transport air to and from the lungs

Explanation: The bronchi are the main airways that transport air to and from the lungs. They branch off from the trachea and further divide into smaller tubes known as bronchioles, which eventually lead to the alveoli where gas exchange occurs.

144. Answer: A) It increases

Explanation: During exhalation, the volume of the chest cavity decreases as the diaphragm relaxes and returns to its dome-shaped position, and the ribs move downward and inward due to the relaxation of the external intercostal muscles. This decrease in volume leads to an increase in pressure within the chest cavity, causing air to be expelled from the lungs.

145. Answer: C) Large surface area and short diffusion distances

Explanation: The alveoli have a large surface area and maintain short diffusion distances between the alveolar air and the bloodstream. This allows for efficient gas exchange by maximizing the contact between oxygen and carbon dioxide in the air and blood.

146. Answer: D) Sparse blood vessels

Explanation: Sparse blood vessels would not contribute to efficient gas exchange in the alveoli. In fact, a rich blood supply is essential for gas exchange to occur effectively. Short diffusion distances, large surface area, and a rich blood supply are key factors contributing to efficient gas exchange in the alveoli.

147. Answer: A) Transport air to and from the lungs

Explanation: The bronchioles are small air tubes in the lungs that branch off from the bronchi and further divide into smaller airways called alveolar ducts. Their primary function is to transport air to and from the alveoli, where gas exchange occurs.

148. Answer: D) By contracting and relaxing to change chest volume

Explanation: The diaphragm is a dome-shaped muscle that separates the thoracic and abdominal cavities. During breathing, it contracts and flattens, increasing the volume of the thoracic cavity and causing inhalation. When it relaxes, it returns to its dome shape, decreasing the volume of the thoracic cavity and causing exhalation.

149. Answer: C) Airway passage

Explanation: The trachea serves as the main airway passage, providing a route for air to enter and exit the lungs. It extends from the larynx to the bronchi, where it branches off into the left and right bronchus, leading to each lung.

150. Answer: C) Filtering air and moving particles away from the lungs

Explanation: Cilia in the trachea play a vital role in filtering air and moving particles, such as dust and microorganisms, away from the lungs. They sweep mucus and trapped particles towards the mouth, where they can be expelled or swallowed, helping to maintain respiratory hygiene.

151. D) Through the circulatory system: Oxygen and nutrients are primarily transported in the blood through the circulatory system, which includes arteries, veins, and capillaries. While diffusion and active transport play roles in various cellular processes, they are not the primary methods of transport through the bloodstream.

152. B) Ventricles: The ventricles are responsible for pumping blood out of the heart to either the lungs (right ventricle) or the body (left ventricle). The atria receive blood into the heart.

153. B) To exchange oxygen and carbon dioxide with the air in the lungs: The pulmonary circulation specifically deals with the exchange of gases, oxygen, and carbon dioxide, between the blood and the air in the lungs.

154. C) Three: The human body has three main types of blood vessels: arteries, veins, and capillaries.

155. A) Arteries: Arteries carry blood away from the heart to various parts of the body.

156. B) To carry blood towards the heart: Arteries carry oxygen-rich blood away from the heart to supply tissues and organs.

157. B) Deep purple-red: Blood in veins appears deep purple-red due to its low oxygen content.
158. A) Arteries: Arteries have thicker walls compared to veins and capillaries to withstand the high pressure of blood pumped by the heart.
159. C) To exchange substances with tissues: Capillaries facilitate the exchange of gases, nutrients, and waste products between the blood and tissues.
160. A) Hormones: Hormones are chemical messengers produced by various glands in the body, and they are transported through the bloodstream.
161. C) Red blood cells: Red blood cells, or erythrocytes, contain hemoglobin, a protein that binds oxygen in the lungs and transports it to tissues throughout the body.
162. D) A, B, AB, O: The four main blood groups are A, B, AB, and O, based on the presence or absence of specific antigens on the surface of red blood cells.
163. D) O: Blood group O is considered the universal donor because it lacks A or B antigens on the surface of its red blood cells, reducing the risk of incompatible reactions during transfusions.
164. A) Can receive blood from any group: Blood group AB individuals can receive blood from any blood group without risking a transfusion reaction because they have both A and B antigens on their red blood cells and no antibodies against A or B blood groups.
165. B) Low red blood cell count: Anemia is characterized by a low red blood cell count, which can result from various factors including nutritional deficiencies, blood loss, or underlying health conditions.
166. A) In millimeters of mercury (mmHg): Blood pressure is typically measured in millimeters of mercury (mmHg) using a sphygmomanometer.



167. A) Systolic: The systolic blood pressure represents the maximum pressure exerted on the walls of the arteries during the heart's contraction phase.
168. B) 120/80 mmHg: The normal blood pressure reading for a healthy adult is typically around 120/80 mmHg, where 120 represents the systolic pressure and 80 represents the diastolic pressure.
169. C) By increasing heart rate and stroke volume: Physical exercise stimulates the heart to beat faster (increasing heart rate) and more forcefully (increasing stroke volume) to meet the increased demand for oxygen and nutrients by the body's tissues.
170. D) Cardiac muscle: Cardiac muscle is unique to the heart and is responsible for its rhythmic contractions, allowing it to pump blood throughout the body.
171. A) To supply blood to the heart muscle: Coronary arteries supply oxygenated blood to the heart muscle itself, ensuring its proper function.
172. B) To prevent backflow of blood: The valves in the heart prevent the backflow of blood and ensure one-way flow through the chambers of the heart.
173. A) Right side: The right side of the heart pumps deoxygenated blood to the lungs for oxygenation.
174. A) To receive blood from the body: The primary function of the atria is to receive blood returning to the heart from the body (right atrium) and lungs (left atrium).
175. B) Diastole: During diastole, the heart relaxes and fills with blood as the atria and ventricles expand.

176. D) Lub-dub: The sound of the heartbeat "lub-dub" is produced by the opening and closing of the heart valves as blood flows through the heart chambers.
177. C) It increases heart rate: Physical exercise typically increases heart rate to supply more oxygen-rich blood to the muscles being exercised.
178. A) Pulmonary arteries: Pulmonary arteries carry deoxygenated blood from the heart to the lungs for oxygenation.
179. B) To exchange oxygen and carbon dioxide with the air in the lungs: The primary function of pulmonary circulation is to facilitate the exchange of gases (oxygen and carbon dioxide) between the blood and the air in the lungs.
180. B) To carry blood around the body: The primary function of systemic circulation is to transport oxygenated blood from the heart to the body's tissues and organs and return deoxygenated blood back to the heart.
181. B) Arteries carry blood towards the heart: Arteries carry oxygen-rich blood away from the heart to various parts of the body, while veins carry deoxygenated blood back to the heart.
182. C) To exchange substances with tissues: Capillaries facilitate the exchange of gases, nutrients, and waste products between the blood and the body's tissues.
183. A) Red blood cells: Red blood cells, or erythrocytes, are primarily responsible for transporting oxygen from the lungs to tissues throughout the body.
184. A) A, B, AB, O: The four main blood groups are A, B, AB, and O, determined by the presence or absence of specific antigens on the surface of red blood cells.
185. D) O: Blood group O is considered the universal donor because its red blood cells lack A or B antigens, reducing the risk of incompatible reactions during transfusions.



186. B) 90-120 mmHg: The normal range for systolic blood pressure is typically between 90 and 120 mmHg, while diastolic pressure should be below 80 mmHg for a healthy adult.
187. B) To pump blood throughout the body: Cardiac muscle is specifically designed to contract rhythmically and pump blood throughout the body via the circulatory system.
188. A) Valves: Valves in veins prevent the backflow of blood and ensure one-way flow towards the heart.
189. C) Left atrium: The left atrium receives oxygenated blood from the lungs via the pulmonary veins.
190. B) To supply blood to the heart muscle: The coronary arteries provide oxygenated blood to the heart muscle itself, ensuring its proper function.
191. D) Dub: The closing of heart valves produces the sound "dub" in the heartbeat.
192. B) Left side: The left side of the heart pumps oxygenated blood to the body through the systemic circulation.
193. A) Systole: During systole, the heart contracts and pumps blood out to the lungs and body.
194. A) To receive blood from the body: The primary function of the atria is to receive blood returning to the heart from the body and lungs.
195. A) Pulmonary arteries: Pulmonary arteries carry deoxygenated blood from the heart to the lungs for oxygenation.





196. B) To exchange oxygen and carbon dioxide with the air in the lungs: The primary function of pulmonary circulation is to facilitate gas exchange in the lungs.
197. B) To carry blood around the body: The primary function of systemic circulation is to transport oxygenated blood from the heart to the body's tissues and organs and return deoxygenated blood back to the heart.
198. B) Arteries carry blood towards the heart: Arteries carry oxygen-rich blood away from the heart to various parts of the body, while veins carry deoxygenated blood back to the heart.
199. C) To exchange substances with tissues: Capillaries facilitate the exchange of gases, nutrients, and waste products between the blood and the body's tissues.
200. A) Red blood cells: Red blood cells, or erythrocytes, contain hemoglobin, which binds oxygen for transport throughout the body.
201. B) Carrying oxygen to cells: The main function of the heart and blood vessels is to pump blood throughout the body, delivering oxygen and nutrients to cells and removing waste products.
202. A) Red blood cells: Red blood cells transport carbon dioxide back to the lungs for exhalation as part of the respiratory process.
203. B) Transporting oxygen: Hemoglobin, a protein in red blood cells, binds to oxygen molecules in the lungs and transports them to tissues throughout the body.
204. A) It forms oxyhaemoglobin: In areas with high oxygen concentration, hemoglobin binds with oxygen molecules to form oxyhemoglobin, facilitating oxygen transport.

205. C) Bone marrow: Red blood cells are primarily produced in the bone marrow of certain bones, such as the sternum, ribs, and pelvis.
206. A) To increase their lifespan: Mature red blood cells lack a nucleus, which allows for more space to carry hemoglobin and increases their flexibility to navigate through narrow blood vessels, thus prolonging their lifespan.
207. C) Biconcave discs: Red blood cells typically have a biconcave disc shape, which increases their surface area for oxygen absorption and flexibility for traveling through narrow capillaries.
208. C) Defending against microbes: White blood cells, or leukocytes, are part of the body's immune system and defend against pathogens, such as bacteria, viruses, and fungi.
209. C) Clotting at wound sites: Platelets, or thrombocytes, are essential for blood clotting (hemostasis) at wound sites to prevent excessive bleeding.
210. C) Group AB: Blood group AB individuals have both A and B antigens on the surface of their red blood cells.
211. C) Agglutination of red blood cells: Mixing incompatible blood groups during a transfusion can lead to the agglutination (clumping) of red blood cells, which can be life-threatening.
212. C) Agglutination of red blood cells: If someone with blood group O receives blood from someone with blood group A, the recipient's immune system may recognize the A antigens as foreign and mount an immune response, leading to the agglutination of red blood cells.
213. B) Lack of iron in the diet: A common cause of anemia is a deficiency in iron, which is necessary for the production of hemoglobin in red blood cells.

214. B) Women: Women are more likely to suffer from anemia, particularly due to factors like menstruation, pregnancy, and childbirth, which can lead to iron deficiency.
215. B) Hypertension: Hypertension is characterized by high blood pressure, which can increase the risk of cardiovascular diseases such as heart attacks and strokes.
216. B) Diastolic pressure below 90 mmHg: Normal blood pressure typically includes a diastolic pressure below 90 mmHg and a systolic pressure below 120 mmHg.
217. C) Excessive vitamin intake: Excessive vitamin intake is not typically cited as a potential cause of hypertension. However, factors such as a sedentary lifestyle, genetic predisposition, and chronic kidney diseases can contribute to hypertension.
218. D) Smoking cessation: Smoking cessation is an important lifestyle adjustment for managing hypertension, as smoking can significantly elevate blood pressure.
219. A) Diuretics: Diuretics increase urine production, leading to the removal of excess fluid from the body, which can help reduce blood volume and lower blood pressure.
220. A) Increased risk of heart attacks and strokes: Untreated hypertension can lead to damage to blood vessels and organs over time, increasing the risk of heart attacks, strokes, and other cardiovascular complications.
221. C) Circulation: The primary function of the body's transport system, which includes the heart and blood vessels, is to facilitate circulation, ensuring the delivery of oxygen, nutrients, and hormones to cells and tissues while removing waste products.
222. C) White blood cells: White blood cells, or leukocytes, are responsible for defending the body against infections by identifying and destroying pathogens such as bacteria, viruses, and fungi.

223. B) Clotting at wound sites: Platelets play a crucial role in blood clotting (hemostasis) at wound sites to prevent excessive bleeding.
224. D) Group O: Blood group O individuals have neither A nor B antigens on the surface of their red blood cells.
225. C) Clotting of blood vessels: Mixing blood from incompatible groups during a transfusion can lead to the clotting of blood vessels, which can be life-threatening.
226. B) Excessive iron intake: A common cause of anemia is a deficiency in iron, rather than excessive intake.
227. B) Women: Women, particularly during menstruation, pregnancy, and childbirth, are more susceptible to anemia due to iron loss and increased iron demands.
228. C) Hypertension: Hypertension is characterized by high blood pressure, which can increase the risk of cardiovascular diseases such as heart attacks and strokes.
229. C) Systolic pressure below 120 mmHg: Normal blood pressure typically includes a systolic pressure below 120 mmHg and a diastolic pressure below 80 mmHg.
230. D) Adequate physical activity: Adequate physical activity is not mentioned as a potential cause of hypertension; in fact, regular exercise is often recommended as a lifestyle adjustment to help manage blood pressure.