NCERT Exemplar Solutions of Class 11 Biology – Chapter 16: Digestion and Absorption

MULTIPLE CHOICE QUESTIONS

1. Which of the following is not true of intestinal villi?

a. They possess microvilli

b. They increase the surface area

c. They are supplied with capillaries and the lacteal vessels

d. They only participate in digestion of fats

Solution: Option (d) is the answer.

Enhanced Explanation: Intestinal villi are finger-like projections in the small intestine that have multiple functions:

- They possess microvilli (brush border) which further increase surface area
- They significantly increase the absorptive surface area of the small intestine
- They contain both blood capillaries and lacteal vessels (lymphatic capillaries)
- They participate in absorption of ALL nutrients (carbohydrates, proteins, fats, vitamins, minerals) - not just fats

2. Hepatopancreatic duct opens into the duodenum and carries:

a. Bile

b. Pancreatic juice

c. Both bile and pancreatic juice

d. Saliva

Solution: Option (c) is the answer.

Enhanced Explanation: The hepatopancreatic duct (also called ampulla of Vater) is formed by the union of the common bile duct and pancreatic duct. It carries both bile from the liver/gallbladder and pancreatic juice from the pancreas into the duodenum.

3. Which of the following is not a common disorder associated with the digestive system?

a. Tetanus

b. Diarrhoea

c. Jaundice

d. Dysentery

Solution: Option (a) is the answer.

Enhanced Explanation:

- **Tetanus** is a neurological disorder caused by Clostridium tetani bacteria affecting the nervous system
- **Diarrhoea** is a digestive disorder involving frequent loose stools
- **Jaundice** is related to liver dysfunction affecting bile metabolism
- **Dysentery** is an intestinal infection causing severe diarrhea

4. A gland not associated with the alimentary canal is:

a. Pancreas

b. Adrenal

c. Liver
d. Salivary glands
Solution: Option (b) is the answer.
Enhanced Explanation:

- **Adrenal glands** are endocrine glands located above the kidneys, producing hormones like adrenaline and cortisol
- **Pancreas, Liver, and Salivary glands** are all digestive glands associated with the alimentary canal

5. Match the two columns and select the correct option:

Column I	Column II
A. Biomacromolecules of food	i. Alimentary canal and associated gland
B. Human digestive system	ii. Embedded in jawbones
C. Stomach	iii. The outer wall of visceral organs
D. Thecodont	iv. Converted into simple substances
E. Serosa	v. J-shaped bag-like structure

Options: a. A-ii, B-i, C-v, D-iii, E-iv
b. A-iv, B-i, C-v, D-ii, E-iii
c. A-i, B-ii, C-iii, D-iv, E-v
d. A-i, B-iii, C-ii, D-iv, E-v
Solution: Option (b) is the answer.
Enhanced Explanation:

- A. Biomacromolecules → iv. Converted into simple substances (digestion process)
- B. Human digestive system → i. Alimentary canal and associated glands
- C. Stomach → v. J-shaped bag-like structure
- D. Thecodont → ii. Embedded in jawbones (type of tooth attachment)
- E. Serosa → iii. The outer wall of visceral organs

6. Match the two columns and select the correct option:

Column I	Column II
A. Duodenum	i. A cartilaginous flap
B. Epiglottis	ii. Small blind sac
C. Glottis	iii. 'U' shaped structure emerging from the stomach
D. Caecum	iv. Opening of windpipe

Options: a. A-i, B-ii, C-iii, D-iv
b. A-iv, B-iii, C-ii, D-i
c. A-iii, B-i, C-iv, D-ii
d. A-ii, B-iv, C-i, D-iii
Solution: Option (c) is the answer.

Enhanced Explanation:

- A. Duodenum → iii. 'U' shaped structure emerging from the stomach
- B. Epiglottis → i. A cartilaginous flap (prevents food from entering trachea)
- C. Glottis → iv. Opening of windpipe
- D. Caecum → ii. Small blind sac (part of large intestine)

7. Match the enzyme with their respective substrate:

Column I	**Column II**
A. Lipase	i. Carbohydrates
B. Nuclease	ii. Fats
C. Carboxypeptidase	iii. Nucleic acids
D. Glycosidases	iv. Proteins, peptones and proteoses

Options: a. A-ii, B-iii, C-i, D-iv
b. A-iii, B-iv, C-ii, D-i
c. A-iii, B-i, C-iv, D-ii
d. A-ii, B-iii, C-iv, D-i

Solution: Option (d) is the answer.

Enhanced Explanation:

- A. Lipase → ii. Fats (breaks down lipids into fatty acids and glycerol)
- B. Nuclease → iii. Nucleic acids (breaks down DNA and RNA)
- C. Carboxypeptidase → iv. Proteins, peptones and proteoses (removes amino acids from C-terminal)
- D. Glycosidases → i. Carbohydrates (breaks down complex sugars)

8. The dental formula in human beings is:

a. 3223/3223
b. 2123/2123
c. 1232/1232
d. 2233/2233

Solution: Option (b) is the answer.

Enhanced Explanation: The human dental formula is **2123/2123**, representing:

- **2** Incisors / **1** Canine / **2** Premolars / **3** Molars
- This formula applies to each half of upper and lower jaw
- Total teeth = (2+1+2+3) × 4 = **32 teeth** in adults

9. The liver is the largest gland and is associated with various functions. Choose which is NOT correct:

a. Metabolism of carbohydrate
b. Digestion of fat
c. Formation of bile
d. Secretion of a hormone called gastrin

Solution: Option (d) is the answer.

Enhanced Explanation:

- Liver functions include carbohydrate metabolism, fat digestion (via bile), and bile formation
- **Gastrin** is secreted by G-cells in the stomach antrum, not by the liver
- Liver secretes bile, albumin, and various plasma proteins, but not gastrin

10. Mark the right statement among the following:

a. Trypsinogen is an inactive enzyme

b. Trypsinogen is secreted by intestinal mucosa

c. Enterokinase is secreted by pancreas

d. Bile contains trypsin

Solution: Option (a) is the answer.

Enhanced Explanation:

- **Trypsinogen** is indeed an inactive enzyme (zymogen) secreted by pancreas
- Trypsinogen is secreted by **pancreas**, not intestinal mucosa
- **Enterokinase** is secreted by **intestinal mucosa**, not pancreas
- **Bile** contains bile salts and pigments, not trypsin