

A-LEVEL

Multiple-choice questions on LIVER

1. **Question:** Which of the following is NOT a function of the liver?

- A) Carbohydrate storage
- B) Protein synthesis
- C) Blood filtration
- D) Detoxification

Answer: C) Blood filtration

Explanation: The liver filters blood, but the primary filtration organ is the kidney.

2. **Question:** Which enzyme is responsible for the breakdown of glycogen into glucose in the liver?

- A) Amylase
- B) Glucokinase
- C) Glycogenase
- D) Glucose-6-phosphatase

Answer: D) Glucose-6-phosphatase

Explanation: Glucose-6-phosphatase is crucial for releasing glucose from glycogen in the liver.

3. **Question:** What is the main product of hemoglobin breakdown in the liver?

- A) Bilirubin
- B) Urea
- C) Cholesterol
- D) Albumin

Answer: A) Bilirubin

Explanation: Bilirubin is produced from the breakdown of heme in hemoglobin.

4. **Question:** Which hormone stimulates the release of bile from the gallbladder?

- A) Insulin
- B) Glucagon
- C) Cholecystokinin (CCK)
- D) Cortisol

Answer: C) Cholecystokinin (CCK)

Explanation: CCK is released in response to the presence of fats in the duodenum, stimulating bile release.

5. **Question:** What role does the liver play in vitamin storage?

- A) Stores vitamin C
- B) Stores vitamin D
- C) Stores vitamin B12
- D) Stores vitamin A

Answer: D) Stores vitamin A

Explanation: The liver stores vitamin A, among other fat-soluble vitamins.

6. **Question:** Which of the following is a function of Kupffer cells in the liver?

- A) Bile production
- B) Phagocytosis
- C) Insulin secretion
- D) Gluconeogenesis

Answer: B) Phagocytosis

Explanation: Kupffer cells are specialized liver macrophages involved in phagocytosis.

7. **Question:** What is the primary role of the liver in lipid metabolism?

- A) Lipogenesis
- B) Lipolysis
- C) Lipoprotein synthesis
- D) Lipid absorption

Answer: C) Lipoprotein synthesis

Explanation: The liver synthesizes lipoproteins for lipid transport in the bloodstream.

8. **Question:** In what form is excess glucose stored in the liver?

- A) Glycogen
- B) Glucose-6-phosphate
- C) Glucagon
- D) Gluconeogenesis

Answer: A) Glycogen

Explanation: The liver stores excess glucose as glycogen for later use.

9. **Question:** Which blood vessel carries nutrient-rich blood from the digestive organs directly to the liver?

- A) Hepatic artery
- B) Hepatic portal vein
- C) Inferior vena cava

D) Aorta

Answer: B) Hepatic portal vein

Explanation: The hepatic portal vein transports blood with absorbed nutrients from the digestive system to the liver.

10. Question: Which liver enzyme is commonly elevated in blood during liver damage or inflammation?

A) Amylase

B) ALT (Alanine aminotransferase)

C) Lipase

D) Alkaline phosphatase

Answer: B) ALT (Alanine aminotransferase)

Explanation: ALT is a specific marker for liver damage when elevated in blood.

11. Question: What is the primary function of the hepatic stellate cells in the liver?

A) Synthesis of bile

B) Detoxification

C) Storage of vitamin K

D) Regulation of extracellular matrix

Answer: D) Regulation of extracellular matrix

Explanation: Hepatic stellate cells play a role in maintaining the liver's structural integrity.

12. **Question:** Which of the following substances is NOT stored in the liver?

- A) Iron
- B) Copper
- C) Calcium
- D) Zinc

Answer: D) Zinc

Explanation: Zinc is not primarily stored in the liver.

13. **Question:** What is the primary component of bile synthesized in the liver?

- A) Cholesterol
- B) Bilirubin
- C) Bile salts
- D) Phospholipids

Answer: C) Bile salts

Explanation: Bile salts aid in the emulsification and digestion of fats.

14. **Question:** Which liver disorder is characterized by the accumulation of fat within hepatocytes?

- A) Cirrhosis
- B) Hepatitis

C) Fatty liver disease

D) Cholelithiasis

Answer: C) Fatty liver disease

Explanation: Fatty liver disease involves the excessive accumulation of fat in liver cells.

15. **Question:** What is the primary role of the liver in ammonia metabolism?

A) Synthesis of urea

B) Conversion to amino acids

C) Formation of uric acid

D) Production of ammonia gas

Answer: A) Synthesis of urea

Explanation: The liver converts toxic ammonia into urea for excretion.

16. **Question:** Which vitamin is essential for the synthesis of blood clotting factors in the liver?

A) Vitamin A

B) Vitamin K

C) Vitamin E

D) Vitamin D

Answer: B) Vitamin K

Explanation: Vitamin K is crucial for synthesizing blood clotting proteins in the liver.

17. **Question:** What is the primary function of the bile produced by the liver?

- A) Neutralizing stomach acid
- B) Emulsifying fats
- C) Activating digestive enzymes
- D) Absorbing water in the intestines

Answer: B) Emulsifying fats

Explanation: Bile emulsifies fats, facilitating their digestion by enzymes.

18. **Question:** Which of the following is a common symptom of liver cirrhosis?

- A) Jaundice
- B) Hyperglycemia
- C) Hypertension
- D) Hyperactivity

Answer: A) Jaundice

Explanation: Jaundice, or yellowing of the skin and eyes, is a common sign of liver dysfunction.

19. **Question:** What is the primary role of the liver in drug metabolism?

- A) Activation of drugs
- B) Excretion of drugs
- C) Detoxification of drugs
- D) Inhibition of drug effects

Answer: C) Detoxification of drugs

Explanation: The liver detoxifies and metabolizes drugs to make them more easily excreted.

20. **Question:** Which hormone regulates glycogen breakdown in the liver?

- A) Insulin
- B) Glucagon
- C) Cortisol
- D) Thyroxine

Answer: B) Glucagon

Explanation: Glucagon stimulates glycogen breakdown into glucose.

21. **Question:** What is the primary source of energy for the liver?

- A) Glucose
- B) Fatty acids
- C) Ketones
- D) Amino acids

Answer: A) Glucose

Explanation: Glucose is a vital source of energy for liver cells.

22. **Question:** Which liver cell type is responsible for the production of collagen during fibrosis?

- A) Hepatocytes

- B) Kupffer cells
- C) Hepatic stellate cells
- D) Endothelial cells

Answer: C) Hepatic stellate cells

Explanation: Hepatic stellate cells contribute to fibrosis by producing collagen.

23. Question: What is the role of the liver in blood glucose regulation?

- A) Glycogenolysis
- B) Glycogenesis
- C) Gluconeogenesis
- D) All of the above

Answer: D) All of the above

Explanation: The liver regulates blood glucose through glycogenolysis, glycogenesis, and gluconeogenesis.

24. Question: Which of the following is a condition where the liver becomes scarred and nodular?

- A) Hepatitis
- B) Fatty liver disease
- C) Cirrhosis
- D) Cholecystitis

Answer: C) Cirrhosis

Explanation: Cirrhosis is characterized by extensive liver scarring.

25. **Question:** What is the primary role of bile in digestion?

- A) Breakdown of proteins
- B) Emulsification of fats
- C) Activation of enzymes
- D) Absorption of nutrients

Answer: B) Emulsification of fats

Explanation: Bile emulsifies fats, increasing their surface area for enzymatic digestion.

26. **Question:** Which liver enzyme is used as an indicator of alcohol-induced liver damage?

- A) AST (Aspartate aminotransferase)
- B) ALP (Alkaline phosphatase)
- C) GGT (Gamma-glutamyl transferase)
- D) LDH (Lactate dehydrogenase)

Answer: C) GGT (Gamma-glutamyl transferase)

Explanation: GGT is elevated in conditions like alcoholic liver disease.

27. **Question:** What is the function of the hepatic portal vein in liver physiology?

- A) Drains oxygenated blood from the liver

B) Drains nutrient-rich blood from the digestive organs to the liver

C) Transports bile to the intestines

D) Connects the liver to the gallbladder

Answer: B) Drains nutrient-rich blood from the digestive organs to the liver

Explanation: The hepatic portal vein carries blood from the digestive system to the liver for processing.

28. **Question:** Which liver disorder is often associated with excessive alcohol consumption?

A) Hepatitis

B) Cirrhosis

C) Fatty liver disease

D) Hemochromatosis

Answer: B) Cirrhosis

Explanation: Chronic alcohol abuse can lead to cirrhosis of the liver.

29. **Question:** What is the role of the liver in the metabolism of lipids?

A) Lipolysis

B) Lipogenesis

C) Lipoprotein synthesis

D) All of the above

Answer: D) All of the above

Explanation: The liver is involved in both lipid breakdown and synthesis.

30. **Question:** Which of the following is a liver disease caused by a viral infection?

- A) Cirrhosis
- B) Hemochromatosis
- C) Hepatitis
- D) Wilson's disease

Answer: C) Hepatitis

Explanation: Hepatitis is commonly caused by viral infections.

31. **Question:** What is the main role of the liver in iron metabolism?

- A) Synthesis of hemoglobin
- B) Storage of iron
- C) Excretion of iron
- D) Breakdown of iron

Answer: B) Storage of iron

Explanation: The liver stores excess iron.

32. **Question:** Which liver enzyme is elevated in obstructive jaundice?

- A) ALT (Alanine aminotransferase)

- B) AST (Aspartate aminotransferase)
- C) Alkaline phosphatase
- D) GGT (Gamma-glutamyl transferase)

Answer: C) Alkaline phosphatase

Explanation: Alkaline phosphatase is elevated when bile flow is obstructed.

33. **Question:** Which vitamin is crucial for collagen synthesis in the liver?

- A) Vitamin C
- B) Vitamin D
- C) Vitamin K
- D) Vitamin E

Answer: A) Vitamin C

Explanation: Vitamin C is essential for collagen formation.

34. **Question:** What is the primary function of the liver in drug detoxification?

- A) Activation of drugs
- B) Inactivation and elimination of drugs
- C) Storage of drugs
- D) Absorption of drugs

Answer: B) Inactivation and elimination of drugs

Explanation: The liver processes drugs to make them less toxic and easier to eliminate.

35. **Question:** In which part of the liver does most of the metabolic activity occur?

- A) Hepatic lobules
- B) Central veins
- C) Portal triads
- D) Sinusoids

Answer: A) Hepatic lobules

Explanation: Hepatic lobules are the functional units where metabolic activities take place.

36. **Question:** Which of the following is a liver disorder characterized by an accumulation of copper?

- A) Cirrhosis
- B) Hemochromatosis
- C) Wilson's disease
- D) Fatty