



QUESTION WORKBOOK

The liver: detoxification, deamination and the making of urea

Hormonal communication, plant responses and homeostasis · Unit B15

OCR A 5.1.2 · Edexcel B 9.9 ii · CAIE 14.1

15 questions · 52 marks

NAVY SCREEN EDITION

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SECTION A · Short, 1 to 2 marks**A1**

LD-Q7

State what is meant by excretion, and state why the passing out of faeces is not an example of it. [2]

A2

LD-Q15

State where carbon dioxide is excreted from the body, and state what happens to blood pH if carbon dioxide is allowed to accumulate. [2]

SECTION B · Standard, 3 to 5 marks**B1**

LD-Q1

Describe what happens to an amino acid that the body does not need, from deamination through to the urea leaving the liver, naming where each step of the ornithine cycle takes place. [5]

B2 Describe the structure of a liver lobule, and describe the direction in which blood and bile each travel through it. [4]
LD-Q2

B3 Explain how the liver deals with the alcohol in a drink, and explain why heavy drinking over many years leads to fat accumulating in the liver. [4]
LD-Q3

B4 Describe the role of Kupffer cells in the liver, and describe what happens to the haem group of an old red blood cell that they break down. [4]
LD-Q8

B5 Explain why a drug taken as a tablet by mouth may reach the rest of the body at a much lower concentration than the same dose given by injection. [4]
LD-Q9

B6

LD-Q10

A patient with cirrhosis is prescribed a drug that is normally broken down entirely by enzymes in the smooth endoplasmic reticulum of hepatocytes. Suggest why their doctor prescribes a lower dose than usual, and suggest what would happen if the normal dose were given repeatedly. [4]

B7

LD-Q11

Birds and reptiles convert nitrogenous waste into uric acid rather than into urea. Explain why uric acid is a more suitable excretory product than urea for an animal that develops inside a shelled egg. [4]

B8

LD-Q12

Compare the excretion of carbon dioxide with the excretion of urea, referring to where each waste is produced, the organ where each is processed for removal, and the organ where each actually leaves the body. [4]

B9

LD-Q4

Name the two blood vessels that carry blood into the liver and the vessel that carries blood away from it, stating what the blood in each of the incoming vessels contains. [3]

B10

LD-Q5

A freshwater fish excretes its nitrogenous waste as ammonia, while a mammal spends ATP converting the same ammonia into urea. Explain why the mammal does so. [3]

B11

LD-Q6

A patient with advanced liver damage has a blood urea concentration below the normal range and a blood ammonia concentration above it. Suggest an explanation for both measurements, and suggest why the urea reading could give a misleading impression of how well the kidneys are working. [3]

B12

LD-Q13

Hepatocytes contain unusually large amounts of the enzyme catalase. Explain what this enzyme does, and explain why a liver cell needs so much of it. [3]

B13

LD-Q14

An athlete eats a very high-protein diet for several weeks to build muscle, far more protein than their body needs. Suggest what happens to the extra amino acids, and suggest why their blood urea concentration is likely to be higher than average as a result. [3]

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