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37	A	B	C	D	E
38	A	B	C	D	E
39	A	B	C	D	E

PRACTICE QUESTIONS

Sharjah Health Authority (SHA)

BICTH

Biochemistry Exam

Uploaded by Community B

EDITION

Original Demo

QUESTIONS

8

ISSUED

October 14, 2026

Before you begin

What this is

8 practice questions for Sharjah Health Authority (SHA) **BICTH**, each with its answer key and an explanation. Answer a question before you read its key - the explanation is worth more once you have committed.

If something looks wrong

Send us three things and we will check it:

- the exam code, **BICTH**
- the question number
- the email address on your order

Write to **support@mometrix.net**. We reply within one business day.

Licence

Free Mometrix practice demo. The complete question bank is available through a paid account.

QUESTION 1

SINGLE CHOICE

Deficiency of which enzyme causes accumulation of δ -aminolevulinic acid (ALA) and porphobilinogen (PBG), producing the neurological symptoms seen in acute intermittent porphyria?

- ☐ A ALA dehydratase (porphobilinogen synthase)
- ☒ B Uroporphyrinogen I synthase (porphobilinogen deaminase / hydroxymethylbilane synthase)
- ☐ C Uroporphyrinogen decarboxylase
- ☐ D Ferrochelatase

ANSWER B

WHY Acute intermittent porphyria is caused by a partial deficiency of porphobilinogen deaminase (also called hydroxymethylbilane synthase), the third enzyme of heme synthesis. The block upstream causes buildup of ALA and PBG, which are associated with the neurovisceral attacks. Deficiency of ALA dehydratase causes a separate, rarer porphyria.

QUESTION 2

SINGLE CHOICE

Which mitochondrial complex directly transfers electrons from ubiquinol (QH₂) to cytochrome c?

- ☐ A Complex I
- ☐ B Complex II
- ☒ C Complex III
- ☐ D Complex IV

ANSWER C

WHY Complex III, also called cytochrome bc₁ complex, oxidizes ubiquinol and transfers the resulting electrons through the cytochrome c pathway.

QUESTION 3

SINGLE CHOICE

Which coenzyme is required by transaminases (aminotransferases) for the transfer of an amino group from an amino acid to α -ketoglutarate?

- ☒ **A** Pyridoxal phosphate (PLP), the active form of vitamin B6
- ☐ **B** Tetrahydrofolate (THF)
- ☐ **C** Thiamine pyrophosphate (TPP)
- ☐ **D** Flavin adenine dinucleotide (FAD)

ANSWER A

WHY Transaminases use pyridoxal phosphate (PLP), derived from vitamin B6, as a coenzyme. PLP forms a Schiff base intermediate with the amino acid, enabling transfer of the amino group to α -ketoglutarate to form glutamate. THF carries one-carbon units, TPP is used by α -ketoglutarate dehydrogenase and transketolase, and FAD is used by acyl-CoA dehydrogenase and succinate dehydrogenase.

QUESTION 4

SINGLE CHOICE

In the mitochondrial electron transport chain, which complex directly transfers electrons from ubiquinol (QH₂) to cytochrome c?

- ☐ **A** Complex I (NADH:ubiquinone oxidoreductase)
- ☐ **B** Complex II (succinate:ubiquinone oxidoreductase)
- ☒ **C** Complex III (ubiquinol:cytochrome c oxidoreductase)
- ☐ **D** Complex IV (cytochrome c oxidase)

ANSWER C

WHY Complex III (the cytochrome bc₁ complex, or ubiquinol:cytochrome c oxidoreductase) oxidizes ubiquinol back to ubiquinone and passes the electrons, one at a time via the Q cycle, to cytochrome c. Complex I and II both reduce ubiquinone to ubiquinol; Complex IV reduces O₂ to H₂O using electrons from cytochrome c.

QUESTION 5

MULTIPLE CHOICE

Which of the following amino acids are classified as purely glucogenic, meaning their carbon skeletons are converted only into pyruvate or intermediates of the citric acid cycle that yield glucose via gluconeogenesis? (Choose two.)

- ☐ A Leucine
- ☒ B Alanine
- ☐ C Lysine
- ☒ D Glutamate

ANSWER B • D

WHY Alanine is transaminated to pyruvate, and glutamate is transaminated to α -ketoglutarate - both intermediates feed gluconeogenesis, making them purely glucogenic. Leucine and lysine are the two purely ketogenic amino acids; their carbon skeletons yield only acetyl-CoA or acetoacetyl-CoA, which cannot contribute net carbon to gluconeogenesis.

QUESTION 6

SINGLE CHOICE

Allopurinol reduces uric acid production primarily by inhibiting which enzyme?

- ☐ A Adenosine deaminase
- ☒ B Xanthine oxidase
- ☐ C Uricase
- ☐ D Hypoxanthine-guanine phosphoribosyltransferase

ANSWER B

WHY Allopurinol is converted to oxypurinol, and both inhibit xanthine oxidase, decreasing conversion of hypoxanthine and xanthine to uric acid.

QUESTION 7 SINGLE CHOICE

Cyanide poisoning blocks oxidative phosphorylation most directly by binding to which component of the electron transport chain?

- ☐ A Complex I (NADH-CoQ oxidoreductase)
- ☐ B Complex II (succinate-CoQ oxidoreductase)
- ☒ C Complex IV (cytochrome c oxidase)
- ☐ D ATP synthase (Complex V)

ANSWER C

WHY Cyanide (and azide, CO) binds with high affinity to the ferric (Fe^{3+}) iron of the cytochrome a_3 -Cu_B binuclear center of Complex IV, blocking transfer of electrons to molecular O_2 . This halts the respiratory chain, collapses the proton gradient, and stops oxidative phosphorylation. Rotenone blocks Complex I; malonate (not cyanide) competitively inhibits Complex II; oligomycin blocks the F_0 subunit of ATP synthase (Complex V).

QUESTION 8 MULTIPLE CHOICE

Which of the following laboratory findings are most consistent with hepatocellular injury rather than purely cholestatic disease? (Choose two.)

- ☒ A Markedly elevated alanine aminotransferase (ALT) and aspartate aminotransferase (AST) in plasma
- ☐ B Elevated plasma alkaline phosphatase of hepatic origin with relatively normal ALT/AST
- ☐ C Elevated plasma γ -glutamyltransferase (GGT) and 5'-nucleotidase
- ☒ D Elevated plasma aminotransferases together with increased plasma total bile acids and bilirubin

ANSWER A - D

WHY Hepatocellular injury releases transaminases (ALT, AST) into plasma, so markedly elevated ALT/AST point to hepatocyte damage. Concurrent elevation of bile acids and bilirubin indicates the liver's excretory function is also compromised, which fits mixed hepatocellular injury (e.g., viral hepatitis). In contrast, a predominantly cholestatic pattern shows elevated alkaline phosphatase, GGT, and 5'-nucleotidase with relatively normal transaminases; this points to impaired bile flow rather than hepatocyte destruction.