

01	☐ A	☐ B	☐ C	☐ D	☐ E
02	☐ A	☐ B	☐ C	☐ D	☒ E
03	☐ A	☒ B	☐ C	☐ D	☐ E
04	☒ A	☐ B	☐ C	☐ D	☐ E
05	☐ A	☐ B	☒ C	☐ D	☐ E
06	☐ A	☐ B	☐ C	☐ D	☒ E
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08	☐ A	☐ B	☒ C	☐ D	☐ E
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14	☐ A	☐ B	☐ C	☐ D	☒ E
15	☐ A	☐ B	☒ C	☐ D	☐ E
16	☐ A	☐ B	☒ C	☐ D	☐ E
17	☐ A	☒ B	☐ C	☐ D	☐ E
18	☐ A	☒ B	☐ C	☐ D	☐ E
19	☐ A	☐ B	☐ C	☒ D	☐ E
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23	☐ A	☐ B	☐ C	☐ D	☒ E
24	☐ A	☐ B	☒ C	☐ D	☐ E
25	☐ A	☒ B	☐ C	☐ D	☐ E
26	☐ A	☒ B	☐ C	☐ D	☐ E

27	☒ A	☐ B	☐ C	☐ D	☐ E
28	☐ A	☐ B	☐ C	☒ D	☐ E
29	☒ A	☐ B	☐ C	☐ D	☐ E
30	☐ A	☐ B	☒ C	☐ D	☐ E
31	☐ A	☐ B	☐ C	☒ D	☐ E
32	☐ A	☐ B	☒ C	☐ D	☐ E
33	☐ A	☐ B	☒ C	☐ D	☐ E
34	☐ A	☐ B	☐ C	☒ D	☐ E
35	☐ A	☐ B	☐ C	☐ D	☒ E
36	☐ A	☐ B	☐ C	☒ D	☐ E
37	☐ A	☐ B	☐ C	☐ D	☒ E
38	☐ A	☐ B	☐ C	☒ D	☐ E
39	☐ A	☐ B	☐ C	☐ D	☒ E

PRACTICE QUESTIONS

Canadian Alliance of Medical Laboratory Professionals Regulators (CAMLPR)

BCO

Core Lab Bundle (Chem, Hem, Transf)

EDITION

Demo

QUESTIONS

9

FORMAT

Limited Edition PDF

Before you begin

What this is

9 practice questions for Canadian Alliance of Medical Laboratory Professionals Regulators (CAMLPR) BCO, 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, BCO
- the question number
- the email address on your order

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

QUESTION 1

SINGLE CHOICE

When evaluating a new lot of chemistry quality control material, the laboratory compares the new lot's measured values against which of the following?

- ☐ A The patient's previous results from the same analyzer
- ☒ B The manufacturer's package insert target values and the laboratory's own historical mean
- ☐ C Only the lower limit of the reference range for each analyte
- ☐ D The cumulative patient mean calculated from the previous 24 hours

ANSWER B

WHY New QC lots must be verified against both the manufacturer's assigned target values and the laboratory's own established mean to confirm performance before the lot is put into routine use. Patient results and reference ranges are not appropriate comparators for QC lot verification.

QUESTION 2

SINGLE CHOICE

In a clinical chemistry spectrophotometric assay, absorbance (A) is calculated using which relationship?

- ☐ A $A = I_0 \times I$
- ☒ B $A = \log_{10}(I_0 / I)$
- ☐ C $A = I / I_0$
- ☐ D $A = \log_{10}(I / I_0)$

ANSWER B

WHY Absorbance is defined as the logarithm (base 10) of the ratio of incident light intensity (I_0) to transmitted light intensity (I). Per Beer–Lambert law, absorbance is directly proportional to analyte concentration, which is the basis for quantitative spectrophotometric chemistry measurements.

QUESTION 3 SINGLE CHOICE

A patient's CBC shows a hemoglobin of 82 g/L, MCV of 72 fL, and ferritin of 8 µg/L. Which interpretation is most consistent with these findings?

- ☐ A Anemia of chronic disease
- ☒ B Iron deficiency anemia
- ☐ C Vitamin B12 deficiency
- ☐ D Acute blood loss with hemodilution

ANSWER B

WHY Low hemoglobin with a microcytic MCV (below the adult reference interval) combined with a low ferritin (the most specific marker of iron stores) is the classic profile of iron deficiency anemia. Anemia of chronic disease typically shows normal or increased ferritin, B12 deficiency causes macrocytosis, and acute blood loss would not yet reflect hemodilution.

QUESTION 4 SINGLE CHOICE

Which pre-analytical condition most commonly produces a spuriously prolonged prothrombin time (PT) result?

- ☒ A Using a sodium citrate tube that is under-filled below the manufacturer-specified volume
- ☐ B Mixing the specimen by gentle inversion immediately after collection
- ☐ C Centrifuging the specimen at 1500 × g for 15 minutes
- ☐ D Testing the specimen within 4 hours of collection at room temperature

ANSWER A

WHY Sodium citrate tubes must be filled to the stated volume to maintain the correct 9:1 blood-to-anticoagulant ratio. Under-filling raises the citrate concentration relative to plasma and prolongs clotting times such as PT and aPTT, producing falsely elevated results. The other listed practices are acceptable for routine coagulation testing.

QUESTION 5 SINGLE CHOICE

A forward type shows A antigen present (agglutination with anti-A) and the reverse type shows anti-A present in the patient's plasma. What is the most likely explanation?

- ☐ A Group O with a weak anti-A expected from a subgroup
- ☐ B Group A with a missed cold autoantibody only
- ☐ C Group AB with no expected reverse antibodies
- ☒ D Group A, but the reverse typing was performed at the incorrect temperature

ANSWER D

WHY A forward type that is clearly positive with anti-A combined with a reverse type showing anti-A is an ABO discrepancy. Reverse typing for group A individuals should show only anti-B; finding anti-A usually means reverse typing was done at room temperature (cold-reactive antibodies can falsely agglutinate A reverse cells), or the wrong reagent cells were used. It is not a normal group O, group AB, or simply a cold autoantibody pattern.

QUESTION 6 SINGLE CHOICE

Within minutes of starting a transfusion, the patient develops fever, chills, flank pain, and red/brown urine. The transfusionist's immediate first action should be to:

- ☐ A Slow the transfusion rate and observe for 15 minutes
- ☒ B Stop the transfusion and maintain IV access with saline
- ☐ C Administer a pre-medication of acetaminophen and continue the transfusion
- ☐ D Send the unit to the blood bank for re-type only

ANSWER B

WHY Signs and symptoms appearing within minutes of transfusion suggest an acute hemolytic transfusion reaction. The priority is to STOP the transfusion immediately while keeping the IV line open with normal saline so fluid resuscitation can proceed and so the implicated unit, along with post-transfusion samples, can be returned to the blood bank for investigation.

QUESTION 7

SINGLE CHOICE

A patient has the following results: Sodium 138 mmol/L, Potassium 5.8 mmol/L, Chloride 100 mmol/L, Bicarbonate 14 mmol/L, Creatinine 320 µmol/L. Which acid–base disturbance is most consistent with these findings?

- ☐ A Metabolic alkalosis with respiratory compensation
- ☐ B Respiratory acidosis with metabolic compensation
- ☒ C Metabolic acidosis with an elevated anion gap
- ☐ D Mixed metabolic alkalosis and respiratory acidosis

ANSWER C

WHY The bicarbonate of 14 mmol/L indicates metabolic acidosis. The calculated anion gap = $\text{Na} - (\text{Cl} + \text{HCO}_3) = 138 - (100 + 14) = 24$ mmol/L, which is elevated (normal ~8–12 mmol/L). In the setting of an elevated creatinine suggesting renal failure, this fits a high anion-gap metabolic acidosis (renal acidosis) rather than the other listed disturbances.

QUESTION 8

SINGLE CHOICE

An automated hematology analyzer generates a 'blast?' flag on a CBC differential. What is the most appropriate next step for the technologist?

- ☐ A Release the CBC with the automated differential as reported
- ☐ B Repeat the CBC on the same analyzer and report only if the flag disappears
- ☒ C Perform a manual peripheral blood smear review and correlate with the clinical picture before release
- ☐ D Cancel the CBC and request a bone marrow aspirate

ANSWER C

WHY Any clinically significant flag such as 'blast?' must be investigated before results are released. A peripheral blood smear review, with morphological correlation and clinical correlation, is the established standard. Simply repeating the analyzer or releasing without review risks missing a clinically important finding such as acute leukemia.

QUESTION 9

MULTIPLE CHOICE

Which of the following are recognized pre-analytical sources of error in clinical chemistry testing? (Choose two.)

- ☒ **A** Hemolysis from traumatic venipuncture
- ☐ **B** Use of an incorrect calibrator on the analyzer
- ☒ **C** Prolonged tourniquet application causing hemoconcentration
- ☐ **D** Mis-entry of a result into the laboratory information system
- ☐ **E** Failure to follow manufacturer reagent storage temperature

ANSWER **A - C**

WHY Hemolysis from traumatic venipuncture and prolonged tourniquet application causing hemoconcentration are both classic pre-analytical errors (events that occur before the sample is analyzed). Incorrect calibrator use and improper reagent storage are analytical errors, and LIS mis-entry is a post-analytical error.