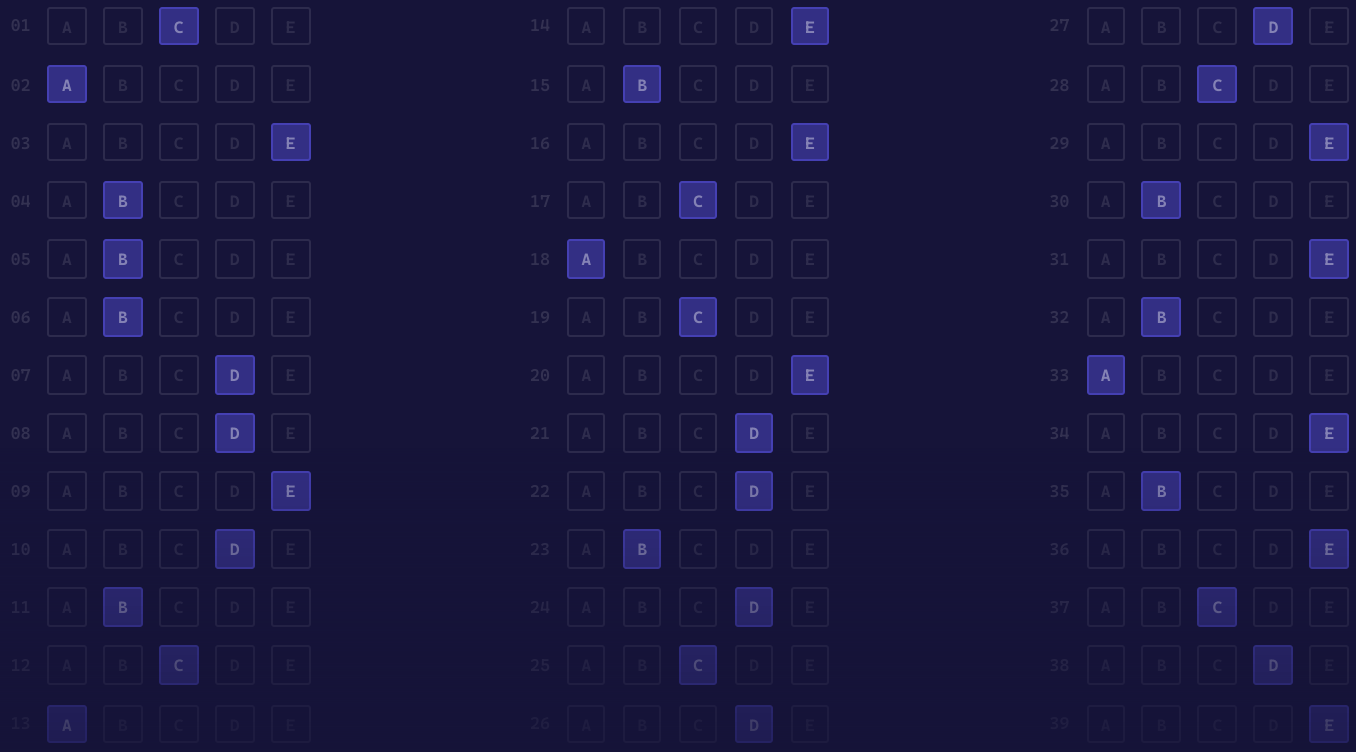
MOMETRIX
SMARTER PREP. BETTER RESULTS.



PRACTICE QUESTIONS

Dubai Health Authority (DHA)

CARFU

Cardiac Perfusionist Exam

EDITION	QUESTIONS	FORMAT
Demo	9	Limited Edition PDF

WEB www.mometrix.net

SUPPORT support@mometrix.net

Before you begin

What this is

9 practice questions for Dubai Health Authority (DHA) `CARFU`, 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, `CARFU`
- the question number
- the email address on your order

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

QUESTION 1 SINGLE CHOICE

A perfusionist is preparing cardioplegia solution for an adult patient undergoing coronary artery bypass grafting. Which composition is consistent with a standard blood-based cardioplegia delivered at a 4:1 (blood:crystalloid) ratio?

A **A 4:1 blood-to-crystalloid mixture with a final potassium concentration of approximately 20–25 mEq/L delivered warm**

B A pure crystalloid solution containing potassium chloride 30 mEq/L administered antegrade only

C A 1:1 blood-to-crystalloid mixture with a final potassium concentration of 5 mEq/L administered as a single dose

D A 4:1 blood-to-crystalloid mixture with no potassium added and delivered continuously throughout aortic cross-clamping

ANSWER **A**

WHY Standard 4:1 blood cardioplegia is mixed with a crystalloid component that raises the final potassium concentration into the depolarizing arrest range (roughly 20–25 mEq/L) to produce diastolic arrest. Option B describes a crystalloid (Buckberg-type) preparation, not 4:1 blood cardioplegia. Option C has an inadequate potassium concentration to arrest the heart. Option D omits potassium, so it cannot produce arrest.

QUESTION 2 SINGLE CHOICE

During the rewarming phase of cardiopulmonary bypass in an adult, which target is most appropriate for the arterial outlet (pump) blood temperature to minimize the risk of cerebral hyperthermia?

A Up to 40.0 °C in order to rapidly restore normothermia

B Not to exceed 37.0 °C

C Not to exceed 38.0 °C, with a maximum gradient of 10 °C between the venous inlet and the arterial outlet

D Not to exceed 39.5 °C, with a maximum gradient of 4 °C between the venous inlet and the arterial outlet

ANSWER B

WHY Current neuroprotective practice limits arterial outlet blood temperature to no more than 37 °C to avoid cerebral hyperthermia during rewarming. A 10 °C gradient (option C) is too large and is not the standard recommendation; a 4 °C gradient with a 39.5 °C ceiling (option D) exposes the brain to hyperthermic perfusate and is not the recommended target. 40 °C (option A) is explicitly discouraged because of the risk of cerebral injury.

QUESTION 3 MULTIPLE CHOICE

During cardiopulmonary bypass, the reservoir level suddenly drops and the arterial line pressure rises sharply. Which of the following are appropriate immediate actions? (Choose two.)

A **Inform the surgeon and consider reducing pump flow while assessing the cause**

B Increase venous suction aggressively to restore reservoir volume regardless of line pressure

C **Inspect the arterial line, cannula, and filter for obstruction or kinking**

D Verify the arterial pressure transducer and check for transducer malposition or damping

ANSWER **A · C**

WHY A rising arterial line pressure with a falling reservoir level suggests obstruction or increased afterload in the arterial side (cannula malposition, kink, clamp, or aortic dissection). The correct response is to alert the surgeon, consider reducing flow, and inspect the arterial line, cannula, and filter (A and C). Aggressive increases in venous suction (B) do not address the arterial-side problem and risk hemolysis and air entrainment. Checking the transducer (D) is appropriate for pressure-monitor artifacts but does not explain a falling reservoir and rising circuit pressure.

QUESTION 4 SINGLE CHOICE

After discontinuation of cardiopulmonary bypass and decannulation, protamine sulfate is administered to reverse heparin. Which activated clotting time (ACT) value generally confirms adequate reversal?

A **An ACT within 10 seconds of the pre-heparin baseline**

B An ACT below 100 seconds regardless of baseline

C An ACT of 200 seconds or less above baseline

D An ACT of 480 seconds or greater

ANSWER **A**

WHY Adequate heparin reversal with protamine is confirmed when the ACT returns to within approximately 10 seconds of the patient's pre-heparin baseline. An absolute ACT <100 s ignores patient variability; an ACT 200 s above baseline still indicates residual anticoagulation; an ACT ≥480 s indicates inadequate reversal.

QUESTION 5 SINGLE CHOICE

Which of the following best describes the normal coronary blood flow pattern in the left coronary artery during the cardiac cycle?

A Continuous flow throughout systole and diastole, with peak flow during systole

B Predominantly diastolic flow, with markedly reduced flow during systole due to ventricular compression

C Flow limited to early diastole only

D Flow only during isovolumetric contraction

ANSWER B

WHY Left coronary artery flow is predominantly diastolic because the contracting left ventricle compresses the intramural vessels during systole, dramatically reducing systolic inflow. Right coronary flow has a more continuous pattern. Flow is not limited to early diastole (C) or to isovolumetric contraction (D), and it is not systolic-predominant (A).

QUESTION 6 SINGLE CHOICE

Which delivery route for cardioplegia provides perfusion of the interventricular septum and lateral wall via collateral circulation when antegrade delivery is inadequate due to severe coronary stenosis?

A Retrograde cardioplegia delivered via the coronary sinus

B Antegrade cardioplegia delivered via the aortic root

C Topical ice-slush cooling of the pericardium

D Systemic hypothermia via the heat exchanger only

ANSWER A

WHY Retrograde cardioplegia through the coronary sinus drains via the coronary veins into the capillary bed and supplies areas distal to severe proximal stenosals, particularly the interventricular septum and lateral wall. Antegrade root delivery (B) may underperfuse territories beyond tight lesions. Topical cooling (C) and systemic hypothermia (D) do not deliver cardioplegia solution to ischemic myocardium.

QUESTION 7 MULTIPLE CHOICE

Which of the following variables are appropriate components of a cardiopulmonary bypass roller-pump circuit safety check prior to initiating bypass? (Choose two.)

A **Verification that all tubing connections are secure and that the pump head raceway/occlusion is properly set**

B **Calibration and zeroing of pressure transducers, level sensor, and bubble detector**

C Confirming the patient's blood type and crossmatch are available in the operating room

D Setting the cardioplegia delivery pressure to maximum to ensure rapid arrest

ANSWER **A** · **B**

WHY Pre-bypass safety checks include confirming secure tubing connections and proper pump-head occlusion (A) and verifying/zeroing the pressure transducers, level sensor, and bubble detector (B). While blood availability (C) is part of overall OR readiness, it is not a perfusion circuit safety check. Setting cardioplegia pressure to maximum (D) is unsafe and is not part of any standard pre-bypass checklist.

QUESTION 8 SINGLE CHOICE

Which finding is the most specific early indicator of heparin-induced thrombocytopenia (HIT) in a patient who has received heparin during cardiac surgery?

A An isolated platelet count of 150 × 10^9/L on postoperative day 1

B **A greater than 50% fall in platelet count occurring 5 to 10 days after heparin exposure, with a positive anti-PF4/heparin antibody assay**

C Mild bleeding from the median sternotomy wound with normal coagulation studies

D A prolonged activated partial thromboplastin time (aPTT) immediately after protamine administration

ANSWER **B**

WHY HIT typically presents with a >50% drop in platelet count 5–10 days after heparin exposure and is confirmed by anti-PF4/heparin antibodies and functional assays. Day-1 mild thrombocytopenia (A) is usually dilutional or related to consumption. Surgical bleeding with normal labs (C) does not indicate HIT. Protamine-related aPTT prolongation (D) reflects heparin neutralization kinetics, not HIT.

QUESTION 9 SINGLE CHOICE

Which practice is most appropriate for minimizing the risk of bacterial contamination of the cardiopulmonary bypass circuit?

A Reusing the same venous reservoir for multiple consecutive cases after a brief saline rinse

B Maintaining strict aseptic technique during circuit priming and drug additions, with all infusions prepared immediately before use

C Leaving stopcocks open to air when not actively in use to equalize pressures

D Warming cardioplegia solution to 42 °C in an open basin on the heart-lung machine

ANSWER B

WHY CPB circuits are single-use devices. Strict aseptic preparation of primes, drugs, and additions (B) is the standard measure to reduce contamination. Reusing reservoirs (A), leaving stopcocks open (C), and using open warmed basins (D) all substantially increase infection risk.