1. In a patient without cardiac disease, depressed myocardial function in sepsis is MOST likely to be manifested by a decrease in which of the following?

A. Coronary blood flow  
B. Left ventricular end-diastolic volume  
C. Arterial oxygen saturation  
D. Left ventricular stroke work

2. Which of the following pharmacokinetic and dynamic parameters are MOST likely to account for improved effectiveness of beta-lactam antibiotics?

A. Duration of drug concentration greater than mean inhibitory concentration  
B. Peak drug concentration  
C. Post-antibiotic killing effect  
D. Trough drug concentration

3. A 49-year-old man with acute renal failure is receiving continuous venovenous hemodialysis. Serum potassium concentration is 5.8 mEq/L. Increasing which of the following is MOST likely to increase potassium clearance in this patient?

A. Dialysate flow rate  
B. Rate of convection for potassium  
C. Rate of fluid replacement  
D. Ultrafiltration rate

4. A 39-year-old woman is brought to the emergency department by ambulance after being found unconscious. She has a history of major depressive disorder. Temperature is 37°C, blood pressure is 130/70 mmHg, heart rate is 120 bpm, and respiratory rate is 22/min. The patient is comatose, and her pupils are fixed and dilated. Glasgow Coma Scale score is 5. Laboratory studies of serum show:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium</td>
<td>134 mEq/L</td>
</tr>
<tr>
<td>Chloride</td>
<td>110 mEq/L</td>
</tr>
<tr>
<td>Potassium</td>
<td>4.8 mEq/L</td>
</tr>
<tr>
<td>Bicarbonate</td>
<td>5 mEq/L</td>
</tr>
<tr>
<td>BUN</td>
<td>6 mg/dL</td>
</tr>
<tr>
<td>Glucose</td>
<td>360 mg/dL</td>
</tr>
<tr>
<td>----------</td>
<td>-----------</td>
</tr>
<tr>
<td>Osmolality</td>
<td>365 mOsm/kg</td>
</tr>
</tbody>
</table>

Arterial blood gas analysis shows:

<table>
<thead>
<tr>
<th>PaO2</th>
<th>380 mmHg</th>
</tr>
</thead>
<tbody>
<tr>
<td>PaCO2</td>
<td>32 mmHg</td>
</tr>
<tr>
<td>pH</td>
<td>6.9</td>
</tr>
</tbody>
</table>

Measurement of which of the following serum concentrations is the **MOST** appropriate next step to confirm the diagnosis?

A. Beta-hydroxybutyrate  
B. Ethanol  
C. Methanol  
D. Salicylate

5. A 70-kg man with a history of COPD and ischemic heart disease is admitted to the ICU for management of community-acquired pneumonia. He receives mechanical ventilation for one week. While undergoing a spontaneous breathing trial, he immediately develops wheezing, tachycardia, and hypotension. Which of the following is the **MOST** likely cause of these clinical findings?

A. Decreased FRC  
B. Decreased venous return  
C. Increased left ventricular afterload  
D. Increased pulmonary vascular resistance
# Answer Key

1. D  
2. A  
3. A  
4. C  
5. C