# Self-Evaluation Examination (SEE) Practice Exam (Sample)

## Study Guide


**Everything you need from our exam experts!**

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# Questions

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**1. What characterizes sickle hemoglobin compared to hemoglobin A?**

**A. It has a higher affinity for oxygen**

**B. It readily polymerizes within red blood cells**

**C. It is present in roughly 50% of African Americans**

**D. It has no significant solubility changes**

**2. What indicates a rising serum sodium in the context of DI?**

**A. High urine osmolarity**

**B. Low urine osmolarity**

**C. Absence of osmotic diuresis**

**D. Retention of sodium in kidneys**

**3. A decrease in pseudocholinesterase activity has been associated with the use of which medications?**

**A. Pancuronium, esmolol, meperidine**

**B. Pancuronium, esmolol, metoclopramide**

**C. Dantrolene, rocuronium, magnesium sulfate**

**D. Metoclopramide, vecuronium, droperidol**

**4. Which nerve is blocked with a fascia iliaca block?**

**A. Sciatic nerve**

**B. Femoral nerve**

**C. Pudendal nerves**

**D. Anterior tibial nerve**

**5. Which of the following is NOT a side effect of mild hypothermia?**

**A. Coagulopathy**

**B. Diuresis**

**C. Seizures**

**D. Ventricular arrhythmias**

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**6. What can potentially reduce electrical interference during procedures involving pacemakers?**

- **A. The use of monopolar cautery**
- **B. The use of bipolar cautery**
- **C. Minimizing patient movement**
- **D. Maximizing electrocautery exposure**

**7. In cases of postdural puncture headache, what procedural technique has been shown to help mitigate symptoms?**

- **A. Insertion of larger gauge needles**
- **B. Aligning the needle bevel parallel to the long axis**
- **C. Performing the puncture while the patient is in a lateral position**
- **D. Keeping the fluid pressure low during the procedure**

**8. What is one consequence of not obtaining preoperative informed consent?**

- **A. It causes immediate infection**
- **B. Charges of assault and battery are possible**
- **C. It results in longer recovery time**
- **D. It prevents a thorough medical examination**

**9. Why are higher settings of desflurane required at higher altitudes?**

- **A. Decreased concentration of desflurane at higher altitudes**
- **B. Decreased partial pressure of desflurane at higher altitudes**
- **C. Higher room temperature effects**
- **D. This statement is incorrect; equivalent settings produce the same anesthetic effect**

**10. In cases of respiratory acidosis, what is true about the renal response?**

- **A. Decreased production of ammonia**
- **B. Increased reabsorption of hydrogen ions**
- **C. Increased excretion of bicarbonate**
- **D. Increased production of ammonia**

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# Answers

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**1. B**
**2. B**
**3. B**
**4. B**
**5. A**
**6. B**
**7. B**
**8. B**
**9. B**
**10. D**

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# Explanations

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## 1. What characterizes sickle hemoglobin compared to hemoglobin A?

**A. It has a higher affinity for oxygen**

**B. It readily polymerizes within red blood cells**

**C. It is present in roughly 50% of African Americans**

**D. It has no significant solubility changes**

**Sickle hemoglobin, often referred to as hemoglobin S, is characterized by its propensity to polymerize when deoxygenated. This polymerization leads to the distortion of red blood cells into a sickle shape, which can obstruct blood flow and lead to various complications associated with sickle cell disease. The structural change in the hemoglobin molecule results in these distinct physical properties, which are significant in understanding the pathology of sickle cell disease and its effects on circulation. Other options detail different characteristics that do not apply to sickle hemoglobin. For example, sickle hemoglobin does not have a higher affinity for oxygen compared to hemoglobin A; instead, it can release oxygen more readily, which is a critical aspect of its behavior in the blood. Additionally, the prevalence of sickle hemoglobin in African Americans is typically lower than 50%. Lastly, sickle hemoglobin exhibits notable changes in solubility compared to hemoglobin A when deoxygenated, thus leading to its polymerization and the clinical manifestations of sickle cell disease. Understanding these features is essential for recognizing the clinical impacts of sickle cell disease and for the development of potential treatments.**

## 2. What indicates a rising serum sodium in the context of DI?

**A. High urine osmolarity**

**B. Low urine osmolarity**

**C. Absence of osmotic diuresis**

**D. Retention of sodium in kidneys**

**In the context of Diabetes Insipidus (DI), a rising serum sodium level typically indicates low urine osmolarity. When the body is unable to concentrate urine due to a lack of antidiuretic hormone (ADH) or resistance to its effects, the kidneys excrete large volumes of dilute urine. This leads to increased water loss from the body, which in turn causes an elevation in serum sodium as the concentration of sodium in the blood becomes higher due to the reduction in total body water. In normal circumstances, concentrated urine would reflect higher osmolarity, but in DI, the opposite occurs due to the kidneys' inability to conserve water effectively. Low urine osmolarity indicates that the urine is dilute and supports the diagnosis of DI, where the lack of proper water retention leads to the aforementioned rise in serum sodium.**

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## 3. A decrease in pseudocholinesterase activity has been associated with the use of which medications?

**A. Pancuronium, esmolol, meperidine**

**B. Pancuronium, esmolol, metoclopramide**

**C. Dantrolene, rocuronium, magnesium sulfate**

**D. Metoclopramide, vecuronium, droperidol**

**The correct choice highlights that a decrease in pseudocholinesterase activity is particularly associated with the medications included in this group. Pseudocholinesterase is an enzyme that breaks down certain drugs, including some neuromuscular blockers and anesthetics. The medications mentioned—pancuronium, esmolol, and metoclopramide—are relevant as they have clinical implications in the context of pseudocholinesterase activity. Pancuronium is a neuromuscular blocker that can be influenced by factors affecting pseudocholinesterase, particularly in terms of duration of action when pseudocholinesterase levels are low. While esmolol is a beta-blocker and primarily does not interact with pseudocholinesterase, its mention could indicate a broader context of drug interactions—but the key focus remains on pancuronium in relation to pseudocholinesterase's role in neuromuscular transmission. In clinical practice, understanding which medications can be affected by pseudocholinesterase activity is crucial for safe and effective patient management, particularly in scenarios involving anesthesia, where neuromuscular agents are commonly used. Therefore, while esmolol may not be directly associated with pseudocholinesterase, its inclusion signifies the**

## 4. Which nerve is blocked with a fascia iliaca block?

**A. Sciatic nerve**

**B. Femoral nerve**

**C. Pudendal nerves**

**D. Anterior tibial nerve**

**The fascia iliaca block specifically targets the femoral nerve, which is situated near the iliac fascia in the groin region. By injecting local anesthetic into this fascia, the block effectively interrupts the transmission of pain signals through the femoral nerve, providing analgesia to the anterior aspect of the thigh, as well as parts of the knee. This block is often utilized in lower extremity surgeries and pain management scenarios. The femoral nerve is crucial for motor innervation of the quadriceps muscle and sensory innervation to the skin of the anterior thigh, making its effective blockade particularly beneficial for procedures involving the hip and thigh area. Thus, the choice of the femoral nerve aligns directly with the anatomical and physiological basis of the fascia iliaca block, illustrating its utility in clinical practice.**

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## 5. Which of the following is NOT a side effect of mild hypothermia?

**A. Coagulopathy**

**B. Diuresis**

**C. Seizures**

**D. Ventricular arrhythmias**

**Mild hypothermia generally refers to a body temperature drop typically in the range of 32 to 35 degrees Celsius (89.6 to 95 degrees Fahrenheit). In this state, the body undergoes various physiological changes, leading to certain side effects. Coagulopathy, which is a condition affecting the blood's ability to clot, is not typically associated with mild hypothermia. While more significant hypothermia can lead to coagulopathy due to the effects on platelet function and coagulation pathways, mild hypothermia does not usually induce this condition. Therefore, identifying coagulopathy as a non-effect of mild hypothermia is correct. In contrast, diuresis may occur due to a paradoxical reaction of the kidneys to cold temperatures, and seizures can result from the CNS's response to decreased temperatures. Ventricular arrhythmias may develop as well but are more commonly seen in moderate to severe hypothermia. Thus, while the latter conditions could manifest under challenging circumstances of hypothermia, the lack of evidence linking mild hypothermia to coagulopathy supports the assertion that coagulopathy is not a side effect associated with this mild state.**

## 6. What can potentially reduce electrical interference during procedures involving pacemakers?

**A. The use of monopolar cautery**

**B. The use of bipolar cautery**

**C. Minimizing patient movement**

**D. Maximizing electrocautery exposure**

**The use of bipolar cautery is particularly effective in reducing electrical interference during procedures involving pacemakers. This technique limits the electrical current to a localized area rather than allowing it to flow through the patient's body, as is the case with monopolar cautery. In monopolar cautery, the electrical current travels from the instrument through the tissue to a grounding pad, which can cause stray currents that might interfere with the functioning of a pacemaker. Bipolar cautery, on the other hand, operates by delivering the current between two electrodes located at the surgical site, minimizing the risk of unintended electrical pathways, and thus reducing the likelihood of interference with the pacemaker's signals or function. The other options do not adequately address the issue of electrical interference. For example, minimizing patient movement can contribute to overall safety but does not directly impact the electrical currents generated during surgical procedures. Likewise, maximizing electrocautery exposure would likely increase the chance of electrical interference, rather than reduce it. Understanding the mechanisms of electrical interference is crucial for maintaining the safety and effectiveness of pacemakers during surgical interventions.**

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## 7. In cases of postdural puncture headache, what procedural technique has been shown to help mitigate symptoms?

**A. Insertion of larger gauge needles**

**B. Aligning the needle bevel parallel to the long axis**

**C. Performing the puncture while the patient is in a lateral position**

**D. Keeping the fluid pressure low during the procedure**

**Aligning the needle bevel parallel to the long axis of the spinal column is a critical procedural technique that can help reduce the occurrence of postdural puncture headache. When the bevel is positioned parallel to the long axis, it creates a clean opening in the dura mater, promoting a smaller and more efficient hole. This minimizes the disruption of surrounding tissues and limits the likelihood of cerebrospinal fluid (CSF) leakage. A cleaner puncture helps reduce the volume of CSF that escapes, which in turn lowers the risk of postdural puncture headaches that can result from the changes in intracranial pressure following a dural puncture. In contrast, using larger gauge needles may actually increase the likelihood of complications, as they create larger puncture sites, which can allow more CSF to leak out. Similarly, the position of the patient during the procedure is less about mitigating headache symptoms and more about comfort or achieving a safer puncture, while concerns about keeping fluid pressure low can be relevant but do not directly contribute to the procedural technique affecting headache outcomes. Thus, aligning the needle bevel correctly is the most effective practice in this context.**

## 8. What is one consequence of not obtaining preoperative informed consent?

**A. It causes immediate infection**

**B. Charges of assault and battery are possible**

**C. It results in longer recovery time**

**D. It prevents a thorough medical examination**

**Not obtaining preoperative informed consent can lead to charges of assault and battery because the absence of consent implies that the patient did not agree to the procedure. Informed consent is a legal and ethical requirement before any medical intervention, ensuring that patients are fully aware of the risks, benefits, and alternatives to the procedure they are about to undergo. If a patient has not given consent and the procedure is performed, it may be viewed as a violation of the patient's bodily autonomy, which could be interpreted as unlawful touching or assault. While other options may present potential complications related to medical procedures, they are not direct consequences of the lack of informed consent in the same manner. For instance, infections, recovery times, and the thoroughness of medical examinations are typically influenced by various medical factors and protocols rather than directly by the consent process itself. Therefore, the risk of legal actions arising from not obtaining informed consent stands out as a crucial consequence in the context of medical ethics and patient rights.**

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## 9. Why are higher settings of desflurane required at higher altitudes?

**A. Decreased concentration of desflurane at higher altitudes**

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**C. Higher room temperature effects**

**D. This statement is incorrect; equivalent settings produce the same anesthetic effect**

**The requirement for higher settings of desflurane at higher altitudes is primarily due to the decreased partial pressure of desflurane in the atmosphere. At higher altitudes, the atmospheric pressure is lower, which results in a subsequent reduction in the partial pressure of gases, including anesthetic agents. Desflurane, being a volatile anesthetic, relies on its partial pressure to exert its pharmacological effect. The brain receives anesthetic effects based on the concentration of desflurane in the alveoli of the lungs, which is directly influenced by the partial pressure of the gas. When the partial pressure is lower, less desflurane reaches the brain, leading to insufficient anesthetic effect if the concentration is not increased. Therefore, to achieve the desired anesthetic level, it becomes necessary to adjust the settings higher to compensate for this reduced partial pressure at elevated altitudes. The other options relate to factors that do not accurately explain the necessity for higher desflurane settings at higher altitudes. The concentration of desflurane itself is not necessarily lower; instead, its effectiveness is diminished due to partial pressure changes. Room temperature effects do not play a significant role in this context, and the assertion that equivalent settings produce the same**

## 10. In cases of respiratory acidosis, what is true about the renal response?

**A. Decreased production of ammonia**

**B. Increased reabsorption of hydrogen ions**

**C. Increased excretion of bicarbonate**

**D. Increased production of ammonia**

**In cases of respiratory acidosis, the body's pH level decreases due to an increase in carbon dioxide ($CO_2$) levels, which leads to the accumulation of carbonic acid. To compensate for this condition, the kidneys play a crucial role in restoring acid-base balance. The correct choice highlights that the kidneys increase ammonia production in response to respiratory acidosis. The ammonia ($NH_3$) can combine with hydrogen ions ($H^+$) to form ammonium ions ($NH_4^+$), which are then excreted in the urine. This process helps to remove excess hydrogen ions, effectively reducing acidity and assisting in the regulation of blood pH. Thus, by increasing ammonia production, the kidneys enhance their ability to buffer excess acids and restore homeostasis. The other options do not accurately reflect the renal compensatory mechanisms at play during respiratory acidosis. Decreased production of ammonia would be counterproductive, as it would hinder the kidneys' ability to manage the increased acidity. Similarly, increased reabsorption of hydrogen ions or increased excretion of bicarbonate would not align with the body's need to counteract acidosis; instead, the kidneys actively work to excrete excess hydrogen ions and retain bicarbonate to help neutralize acidity.**

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