Alternative Question Format
Sample Questions

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Director, Testing Services
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INTRODUCTION

The purpose of the National Certification Examination (NCE) is to assess the knowledge, skills, and abilities necessary for entry-level nurse anesthesia practitioners. The NCE has consisted solely of standard, four-option multiple choice questions (MCQ) until August 2009. In order to enhance the ability of the NCE to assess entry-level competency in the field of nurse anesthesia, the Council on Certification of Nurse Anesthetists (CCNA) has added alternative question formats to the NCE. These question formats are multiple correct response (MCR), calculation, drag and drop, and hotspot questions.

The purpose of this document is to provide examinees with several examples of these new question formats. The intent of providing these examples is to give the examinee an idea of how the questions will appear on the NCE, and NOT to provide a comprehensive sampling of the content outline.

The examples which follow currently only include MCR and calculation formats. Examples of the drag and drop and hotspot formats will be added in the future.

The correct answers for the following questions may be found on pages 13-19.

To learn more about these alternative question formats, please go to the NBCRNA website (http://www.nbcrna.com). Follow the link to Certification Resources and click on the Alternative Question Format FAQs and Tutorial.
Multiple Correct Response (MCR) Sample Questions (no partial credit)

1. What are the hemodynamic goals of hypertrophic cardiomypathy? (Select two)
   - A. Decrease contractility
   - B. Decrease preload
   - C. Increase afterload
   - D. Increase heart rate

2. What are potential complications of pulmonary artery catheter insertion? (Select two)
   - A. Cardiac perforation
   - B. Left bundle branch block
   - C. Mitral valve rupture
   - D. Pulmonary infarction

3. Pharmacologic characteristics that best describe the effect of naloxone at opiate receptors include: (Select two)
   - A. affinity
   - B. efficacy
   - C. intrinsic activity
   - D. reversibility
   - E. stereo selectivity

4. Abnormal placental implantations beyond the endometrium include: (Select three)
   - A. abruptio placentae
   - B. placenta accreta
   - C. placenta increta
   - D. placenta percreta
   - E. placenta previa

5. Characteristics of Eaton-Lambert Syndrome include: (Select three)
   - A. positive response to anticholinesterase agents
   - B. improved strength with activity
   - C. reduced acetylcholine release
   - D. destruction of acetylcholine receptors
   - E. postjunctional defect
   - F. sensitivity to all muscle relaxants

6. Which conditions will result in elevated T4 levels? (Select two)
   - A. Hyperthyroidism
   - B. Primary hypothyroidism
   - C. Secondary hypothyroidism
   - D. Pregnancy
7. A Mallampati Class II airway assessment involves visualization of which pharyngeal structures? (Select three)

- □ A. Upper incisors
- □ B. Soft palate
- □ C. Tonsillar pillars
- □ D. Tonsillar fauces
- □ E. Uvula
- □ F. Epiglottis

8. The musculocutaneous nerve arises from which nerve roots? (Select three)

- □ A. C5
- □ B. C6
- □ C. C7
- □ D. C8
- □ E. T1
- □ F. T2

9. Successful laryngoscopy for intubation requires alignment of which 3 axes? (Select three)

- □ A. Nasal
- □ B. Oral
- □ C. Tracheal
- □ D. Laryngeal
- □ E. Glottic
- □ F. Pharyngeal

10. Which of the following pulmonary function test (PFT) results indicate restrictive pulmonary disease? (Select three)

- □ A. Decreased forced vital capacity (FVC)
- □ B. Decreased FEV1/FVC ratio
- □ C. Decreased FEF 25-75%
- □ D. Decreased total lung capacity (TLC)
- □ E. Decreased functional residual capacity (FRC)
- □ F. Increased FEV1

11. Pharmacological management of thyroid storm may include: (Select three)

- □ A. sodium thiosulfate
- □ B. sodium iodide
- □ C. levothyroxine
- □ D. hydrocortisone
- □ E. methylene blue
- □ F. propranolol
**Calculation Sample Questions**

**NOTE:**
When responding to the calculation questions, enter the number only in the format requested. Do NOT enter units or labels (e.g., liters, L, mmHg), or the response will be marked wrong.

1. **What is the body mass index for a 70 kg patient who is 1.6 meters tall?**

   Enter your answer below as a whole number (no decimals and no units).

   

2. **Calculate cardiac output given the following hemodynamic parameters:**
   Stroke volume: 60 ml/beat; Blood pressure: 150/70 mmHg; Heart rate: 50 per min

   Enter your answer below as a whole number (no decimals) in L/min.

   

3. **Use of positive pressure greater than how many cmH₂O with an LMA may cause stomach inflation?**

   Enter your answer below as a whole number (no decimals) in cmH₂O.

   

4. **In the lateral position, blood flow to the dependent lung of the anesthetized patient most represents which zone of flow?**

   Enter your answer below as a whole number (no decimals).

   

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5. What is the hourly maintenance fluid rate for an 11 pound infant?

Enter your answer below as a whole number (no decimals) in mL/hour.

________________________ mL/hour

6. What is the hourly maintenance fluid requirement for an 80-kg male?

Enter your answer below as a whole number (no decimals) in mL/hour.

________________________ mL/hour

7. On the 12-lead electrocardiogram, what is the upper limit of the normal R wave axis?

Enter your answer below as a whole number (no decimals) in degrees (°).

________________________ Degrees

8. A patient’s blood pressure is 140/70. What is the mean arterial pressure?

Enter your answer below as a whole number (no decimals) in mm Hg.

________________________ mmHg

9. A patient is 72 inches tall and weighs 200 pounds. Calculate this patient's body mass index (BMI).

Enter your answer below as a whole number (no decimals and no units.)

________________________

10. What is the cerebral perfusion pressure for a patient with a blood pressure of 130/70 and intracranial pressure (ICP) of 18?

Enter your answer below as a whole number (no decimals) in mm Hg.

________________________ mm Hg
Drag and Drop, Matching/Ordering Sample Questions (no partial credit)

1. Match the intrinsic muscle of the larynx with its action on the vocal cords.

<table>
<thead>
<tr>
<th>Action on vocal cords</th>
<th>Muscle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Place answer here</td>
<td>Elongates</td>
</tr>
<tr>
<td>Place answer here</td>
<td>Adducts</td>
</tr>
<tr>
<td>Place answer here</td>
<td>Relaxes</td>
</tr>
<tr>
<td>Place answer here</td>
<td>Abducts</td>
</tr>
<tr>
<td>Place answer here</td>
<td></td>
</tr>
<tr>
<td>Posterior cricoarytenoid</td>
<td></td>
</tr>
<tr>
<td>Lateral cricoarytenoid</td>
<td></td>
</tr>
<tr>
<td>Cricothyroid</td>
<td></td>
</tr>
<tr>
<td>Thyroarytenoid</td>
<td></td>
</tr>
</tbody>
</table>

2. Match each blood gas partition coefficient with its corresponding inhalation agent.

<table>
<thead>
<tr>
<th>Inhalation agent</th>
<th>Blood gas partition coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Place answer here</td>
<td>Isoflurane</td>
</tr>
<tr>
<td>Place answer here</td>
<td>Desflurane</td>
</tr>
<tr>
<td>Place answer here</td>
<td>Sevoflurane</td>
</tr>
<tr>
<td>Place answer here</td>
<td>Halothane</td>
</tr>
<tr>
<td></td>
<td>2.5</td>
</tr>
<tr>
<td></td>
<td>1.46</td>
</tr>
<tr>
<td></td>
<td>0.42</td>
</tr>
<tr>
<td></td>
<td>0.65</td>
</tr>
</tbody>
</table>

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3. Match the appropriate laboratory test to each coagulation-related event.

<table>
<thead>
<tr>
<th>Event</th>
<th>Laboratory Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-steroidal anti-inflammatory use</td>
<td>Partial thromboplastin time</td>
</tr>
<tr>
<td>Coumadin administration</td>
<td>Bleeding time</td>
</tr>
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<td>D-dimer</td>
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<td>Active fibrinolysis</td>
<td>Prothrombin time</td>
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4. Match each medication used in aspiration prophylaxis with its classification.

<table>
<thead>
<tr>
<th>Medication</th>
<th>Classification</th>
</tr>
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<tbody>
<tr>
<td>Bicitra</td>
<td>Nonparticulate antacid</td>
</tr>
<tr>
<td>Metoclopramide</td>
<td>Gastric prokinetic</td>
</tr>
<tr>
<td>Omeprazole</td>
<td>Histamine-2 antagonist</td>
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<tr>
<td>Ranitidine</td>
<td>Proton pump inhibitor</td>
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5.

Match the twitch response with its corresponding nerve origin.

<table>
<thead>
<tr>
<th>Nerve origin</th>
<th>Twitch</th>
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<tbody>
<tr>
<td>Place answer here</td>
<td>Adductor twitch</td>
</tr>
<tr>
<td>Femoral</td>
<td></td>
</tr>
<tr>
<td>Place answer here</td>
<td>Quadiceps twitch</td>
</tr>
<tr>
<td>Obturator</td>
<td></td>
</tr>
<tr>
<td>Place answer here</td>
<td>Dorsiflexion</td>
</tr>
<tr>
<td>Tibial nerve</td>
<td></td>
</tr>
<tr>
<td>Place answer here</td>
<td>Plantar flexion</td>
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<tr>
<td>Peroneal nerve</td>
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**Hotspot Sample Questions**

1. In the figure below, click on the nerve that may be compressed during mediastinoscopy.
2. The graph below depicts $F_A/F_1$ of isoflurane, sevoflurane, desflurane, and nitrous oxide. Click on the line that is characteristic of desflurane.

3. Below is a normal capnogram. Click on the portion of the graph where would rebreathing would be seen, if it were present.
4. In the figure below, click on the area of the arm where peripheral nerve stimulator electrodes should be placed to demonstrate thumb twitch via the adductor pollicis muscle.

![Diagram of the arm and hand with labeled median nerve.]

5. In the lead II electrocardiogram tracing below, click on the area which would indicate that the patient has had a myocardial infarction in the past.

![Electrocardiogram tracing showing a myocardial infarction pattern.]
Correct Answers

Multiple Correct Response (MCR) Sample Questions

1. A, C
2. A, D
3. A, D
4. B, C, D
5. B, C, F
6. A, D
7. B, D, E
8. A, B, C
9. B, D, F
10. A, D, E
11. B, D, F

Calculation Sample Questions

1. 27
2. 3
3. 20
4. 3
5. 20
6. 120
7. 90
8. 93
9. 27
10. 72

Drag and Drop Sample Questions (next page)
Drag and Drop Sample Questions

1. Match the intrinsic muscle of the larynx with its action on the vocal cords.

   - **Action on vocal cords**
     - Cricothyroid: Elongates
     - Lateral cricoarytenoid: Adducts
     - Thyroarytenoid: Relaxes
     - Posterior cricoarytenoid: Abducts

2. Match each blood gas partition coefficient with its corresponding inhalation agent.

   - **Inhalation agent**
     - 1.46: Isoflurane
     - 0.42: Desflurane
     - 0.65: Sevoflurane
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2. The graph below depicts \( F_A/F_1 \) of isoflurane, sevoflurane, desflurane, and nitrous oxide. Click on the line that is characteristic of desflurane.

![Graph of \( F_A/F_1 \) vs. Minutes of administration]

3. Below is a normal capnogram. Click on the portion of the graph where would rebreathing would be seen, if it were present.

![Capnogram with \( CO_2 \) in mm Hg]
4. In the figure below, click on the area of the arm where peripheral nerve stimulator electrodes should be placed to demonstrate thumb twitch via the adductor pollicis muscle.

![Diagram of arm showing median nerve](image)

5. In the lead II electrocardiogram tracing below, click on the area which would indicate that the patient has had a myocardial infarction in the past.

![ECG tracing with highlighted ST segment](image)