Introduction

Prior to 2019, the Royal College of Anaesthetists’ (RCoA) Final FRCA written paper consisted of two parts: the combined Multiple-Choice Question (MCQ) and Single Best Answer (SBA) question paper, and the Structured Answer Question (SAQ) paper.

Why Have Two Types of Papers?
The MCQ/SBA paper is a ‘selected-response paper’, where the candidate is given a selection of answers from which to choose. This form of questioning allows the examiners to sample the curriculum widely and can be computer marked, but there is a risk of candidates scoring simply by guessing.

The SAQ paper is a ‘constructed response paper’, where candidates have to produce the correct words or phrases to score marks. The theoretical advantage of using this type of questioning is that it allows candidates to demonstrate a complex, in-depth understanding of topics. However, a smaller proportion of the curriculum is tested by the SAQ paper, and candidates’ answers are very laborious to mark.

Why Change from the SAQ?
The SAQ paper has been used for over two decades. During this time, it has evolved from an essay question to a question divided into three to four sub-questions. The pressure to dispense with the SAQ has come from the time-consuming nature of the paper marking, at a time when examiners are increasingly difficult to recruit. In 2015, the RCoA announced its intention to replace SAQs with a new format of question, the Constructed Response Question (CRQ). In 2019 the RCoA introduced a hybrid SAQ/CRQ paper; CRQs are to completely replace SAQs by September 2020, with the aim of moving towards computer-based marking thereafter.

What Are CRQs?
The RCoA describes their idea of CRQs as consisting of

- Open-ended short answer questions with precise answer templates;
- Most commonly used to assess knowledge and application-level cognitive skills;
- Can include real-world artefacts (graphs, images, scenarios, cases);
- Typically consist of three to five sub-sections, often including a clinical scenario;
- Sub-sections increase in complexity and difficulty as the question progresses.

In our view, the six pilot CRQs released by the RCoA are a little more structured than their predecessor SAQs. One- or two-word answers to short sentences are required.

What Have We Learnt from Writing This Book?
During the writing of this book, we aimed to ‘get into the head’ of the RCoA examiner. From what we have learnt, we think we can give you a few tips for the CRQ paper:

- Like the SAQ paper, one to two questions per paper are likely to be difficult, one to two easy and the rest moderate. The pass mark will reflect this, so if you are finding a question particularly hard – don’t worry!
Although it has not been confirmed at the time of writing this book, the most likely format of the CRQ paper is to mirror that of the current SAQ, i.e. one question from each of the mandatory units of training (neuro, cardiac, paediatric, critical care, pain and obstetric), four from general duties and two from optional units. We have reflected this when writing the question papers.

The easiest way of writing a CRQ question is by basing it on a recent BJA Education article or on guidance published by the RCoA, AAGBI or other national bodies. As part of your revision, you should consider reading the last few years' BJA Education articles, major clinical guidelines and national audit reports.

When you are asked to list the clinical features of acromegaly, or the physiological consequences of obesity, answer widely across all body systems. If you give five cardiovascular features, you are unlikely to get all the marks. It is more likely that there will be, for example, 2 marks for cardiovascular, 1 for metabolic, 1 for airway and 1 for gastrointestinal.

Where a question asks for three clinical features, you are likely only to get marks for the first three that you write down – so make those your best ones!

The easiest way to write a CRQ is to adapt an old SAQ, so make sure you look through the previous SAQ papers published by the RCoA on their website.

The RCoA have stated their intention to include clinical data (e.g. arterial blood gases) and radiological pictures in their CRQs. In writing this book, we found that anatomy is most easily assessed in a 'label the diagram' type question and suspect that this is a direction that the examiners will also move in.

Unlike the SAQ, there is plenty of time to complete the CRQ paper. Most importantly, there is time to read the question carefully. So, if the question says the word 'specific', you must answer specifically. There are unlikely to be any marks for woolly answers such as 'ABCDE assessment'.

We hope you find this book a useful revision and examination practice tool!
Question 1.

Anton is a 32-year-old man who was found unconscious and brought to the Emergency Department. His past medical history includes craniopharyngioma (resected as a child) and a ventriculoperitoneal (VP) shunt. The neurosurgeon suspects the patient has hydrocephalus secondary to a blocked VP shunt.

a) List two other possible neurological diagnoses based on the information above. (2 marks)
1. ___________________________________________________________________
2. ___________________________________________________________________

b) List two symptoms and four signs of an acute rise in intracranial pressure (ICP). (6 marks)
Symptoms:
1. ___________________________________________________________________
2. ___________________________________________________________________

Signs:
1. ___________________________________________________________________
2. ___________________________________________________________________
3. ___________________________________________________________________
4. ___________________________________________________________________

c) Complete the following table regarding cerebrospinal fluid (CSF) flow. (5 marks)

<table>
<thead>
<tr>
<th>1. Site of CSF production</th>
<th>Through</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Flows to</td>
<td></td>
</tr>
<tr>
<td>3. Flows to</td>
<td></td>
</tr>
<tr>
<td>4. Flows to subarachnoid space through</td>
<td>And</td>
</tr>
<tr>
<td>5. Absorption takes place at</td>
<td></td>
</tr>
</tbody>
</table>

d) Name three roles of CSF. (3 marks)
1. ___________________________________________________________________
2. ___________________________________________________________________
3. ___________________________________________________________________

e) The neurosurgeon suspects that the VP shunt is infected and removes it. She inserts an external ventricular drain (EVD) to relieve the raised ICP and prescribes a setting of +15 cmH₂O. How would you set up the collecting burette? (2 marks)
______________________________________________________________________
______________________________________________________________________
f) List two complications associated with EVDs. (2 marks)
1. ___________________________________________________________
2. ___________________________________________________________

Question 2.
David, a 56-year-old man, is listed for elective repair of a large incisional hernia. He has a background history of dilated cardiomyopathy.

a) Complete the following table (with low, normal or high) describing the pathological features of the three World Health Organization–recognised types of cardiomyopathy. (3 marks)

Table 1.2a  Types of cardiomyopathy

<table>
<thead>
<tr>
<th></th>
<th>Dilated</th>
<th>Hypertrophic</th>
<th>Restrictive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiac output</td>
<td>Low</td>
<td>Low</td>
<td></td>
</tr>
<tr>
<td>Stroke volume</td>
<td>Low</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contractility</td>
<td>Normal</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

b) Although most commonly idiopathic, list three other causes of dilated cardiomyopathy. (3 marks)
1. ___________________________________________________________
2. ___________________________________________________________
3. ___________________________________________________________

At the pre-operative clinic, David’s symptoms of heart failure appear to be well controlled, and his chest is clear on auscultation. He takes 10 mg of Ramipril daily and last attended cardiology clinic more than 12 months ago.

c) List three investigations you would request prior to listing David for his elective procedure. (3 marks)
1. ___________________________________________________________
2. ___________________________________________________________
3. ___________________________________________________________

Following relevant investigations, David proceeds to surgery.

d) Aside from AAGBI-recommended standard monitoring, what further monitoring and access would you instigate prior to anaesthetising David for his incisional hernia repair? (3 marks)
1. ___________________________________________________________
2. ___________________________________________________________
3. ___________________________________________________________

e) State the principles by which you would manage his cardiovascular physiology intra-operatively. (5 marks)
1. ___________________________________________________________
2. ___________________________________________________________
Your consultant suggests performing an epidural block for David’s surgery due to the size of the hernia.

f) List two advantages and one disadvantage of neuraxial blockade specific to cardiovascular physiology in dilated cardiomyopathy. (3 marks)

Advantages:
1. ___________________________________________________________________
2. ___________________________________________________________________

Disadvantage:
1. ___________________________________________________________________

Question 3.
Rachel is a 53-year-old woman who has spent 10 days ventilated on the Intensive Care Unit (ICU) for a community-acquired pneumonia. She is weaning from mechanical ventilation, having had a tracheostomy sited. However, you notice she appears weak and struggles to lift her arms.

a) Define ICU-acquired weakness (ICUAW). (1 mark)

b) List the three classes of ICUAW. (3 marks)
1. ___________________________________________________________________
2. ___________________________________________________________________
3. ___________________________________________________________________

c) List six risk factors for the development of ICUAW. (6 marks)
1. ___________________________________________________________________
2. ___________________________________________________________________
3. ___________________________________________________________________
4. ___________________________________________________________________
5. ___________________________________________________________________
6. ___________________________________________________________________

d) List four clinical features of ICUAW. (4 marks)
1. ___________________________________________________________________
2. ___________________________________________________________________
3. ___________________________________________________________________
4. ___________________________________________________________________

e) List four clinical investigations that aid the diagnosis and differentiation of ICUAW. (4 marks)
1. ___________________________________________________________________
2. ___________________________________________________________________
3. ___________________________________________________________________
4. ___________________________________________________________________
f) What proportion of patients diagnosed with ICUAW will die during their hospital admission? (1 mark)

______________________________________________________________________

g) What proportion of patients who survive their hospital admission will achieve a complete recovery? (1 mark)

______________________________________________________________________

Question 4.
You review Frank, a 3-year-old boy on your day-case list who will be undergoing a circumcision. He weighs 15 kg. His parents want to discuss analgesia and have read an information leaflet about caudal analgesia.

a) List four other analgesic options that could be considered in this case. (4 marks)
1. ___________________________________________________________________
2. ___________________________________________________________________
3. ___________________________________________________________________
4. ___________________________________________________________________

b) Complete the labels (i–vi) on the following figure. (3 marks)

i. ___________________________________________________________________
ii. ___________________________________________________________________
iii. ___________________________________________________________________
iv. ___________________________________________________________________
v. ___________________________________________________________________
vi. ___________________________________________________________________

Figure 1.4b Anatomy of the caudal space

c) Where does the dural sac normally end in a child of this age? (1 mark)

______________________________________________________________________

d) List four complications of caudal blockade. (4 marks)
1. ___________________________________________________________________
2. ___________________________________________________________________
3. ___________________________________________________________________
4. ___________________________________________________________________
e) State the name, concentration and volume of local anaesthetic agent you would use for the caudal in this case, according to the Armitage ‘rules’. (3 marks)

Name _________________________________________________________________
Concentration __________________________________________________________
Volume _______________________________________________________________

f) List two drugs (with doses) that could be added to your local anaesthetic mixture to prolong the duration or quality of the block. (2 marks)
1. ___________________________________________________________________
2. ___________________________________________________________________

g) Following surgery, the recovery nurse is concerned that Frank is in pain. List three methods of assessing pain in a child of this age group. (3 marks)
1. ___________________________________________________________________
2. ___________________________________________________________________
3. ___________________________________________________________________

Question 5.

Lorna is a 30-year-old nulliparous woman on the maternity unit. She has been classified as ‘high risk’ and is on continuous cardiotocography (CTG) monitoring.

a) List three features of the foetal heart rate (FHR) that are used to define and interpret CTG traces. (3 marks)
1. ___________________________________________________________________
2. ___________________________________________________________________
3. ___________________________________________________________________

b) How may a CTG trace be categorised? (3 marks)
1. ___________________________________________________________________
2. ___________________________________________________________________
3. ___________________________________________________________________

Following review of the CTG, the obstetric team decides to take a foetal blood sample (FBS).

c) Complete the following table regarding the classification for FBS results. (6 marks)

<table>
<thead>
<tr>
<th>pH</th>
<th>Lactate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td></td>
</tr>
<tr>
<td>Borderline</td>
<td></td>
</tr>
<tr>
<td>Abnormal</td>
<td></td>
</tr>
</tbody>
</table>

The FBS is abnormal, and a decision is made to undertake a caesarean section.

d) According to the National Institute for Health and Care Excellence’s categorisation of the urgency of a caesarean section, explain each category below (no marks will be awarded for time to delivery). (4 marks)

Category 1. ________________________________________________________________
e) Which women may be offered a planned caesarean section? (4 marks)
1. ___________________________________________________________________
2. ___________________________________________________________________
3. ___________________________________________________________________
4. ___________________________________________________________________

Question 6.
You are called to the Emergency Department to assess Ian, a 63-year-old man with known chronic obstructive pulmonary disease (COPD). He has sustained fractures to his ninth, tenth and eleventh ribs on his right-hand side following a fall but has no other injuries.

a) List five pulmonary complications that may result following multiple rib fractures. (5 marks)
1. ___________________________________________________________________
2. ___________________________________________________________________
3. ___________________________________________________________________
4. ___________________________________________________________________
5. ___________________________________________________________________

b) Other than additional analgesia, list two measures you would instigate to help prevent pulmonary complications in this patient. (2 marks)
1. ___________________________________________________________________
2. ___________________________________________________________________

c) Despite regular paracetamol and codeine, Ian remains in pain. State which drugs you would add next to Ian’s analgesic regimen. (2 marks)
1. ___________________________________________________________________
2. ___________________________________________________________________

Despite all pharmacological attempts to make Ian comfortable, he remains in pain.

d) List three regional anaesthetic techniques that could provide analgesia in this case, and for each technique, give one advantage and one disadvantage. (9 marks)

Table 1.6d  Advantages and disadvantages of regional techniques used in the management of rib fractures

<table>
<thead>
<tr>
<th>Regional anaesthetic technique</th>
<th>Advantage</th>
<th>Disadvantage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

e) What are the indications for surgical rib fixation? (2 marks)
**Question 7.**

Bronagh is an 86-year-old woman admitted for an elective total hip replacement due to osteoarthritis, which you opt to perform under spinal anaesthesia. She has a background history of hypertension. During the procedure, there is a sudden change in her observations associated with cementing of the hip joint.

a) Complete the following table defining grades one and two of bone cement implantation syndrome (BCIS). (6 marks)

<table>
<thead>
<tr>
<th>BCIS grade</th>
<th>SpO$_2$ (%)</th>
<th>Systolic blood pressure (% reduction)</th>
<th>Loss of consciousness (yes or no)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

b) List the defining feature of grade 3 BCIS. (1 mark)

c) Aside from systemic hypertension, list three further **patient** risk factors for the development of BCIS. (3 marks)

1. 
2. 
3. 

d) Although the exact causative mechanism is poorly understood, summarise the pathophysiological mechanism through which **hypoxia** (2 marks) and **cardiovascular collapse** (2 marks) are thought to occur.

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e) During cementing, Bronagh becomes hypoxic and hypotensive. You have called for help. Describe your immediate management. (4 marks)

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Table 1.7a  **Grading of BCIS**

<table>
<thead>
<tr>
<th>BCIS grade</th>
<th>SpO$_2$ (%)</th>
<th>Systolic blood pressure (% reduction)</th>
<th>Loss of consciousness (yes or no)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
f) Aside from not using cement, list two surgical techniques that can be employed to reduce the risk of BCIS. (2 marks)
1. ___________________________________________________________________
2. ___________________________________________________________________

Question 8.
Louise, a 32-year-old woman, is referred to an endocrinologist with symptoms of hyperthyroidism.

a) What are the four steps involved in synthesis of thyroid hormones? (4 marks)
1. ___________________________________________________________________
2. ___________________________________________________________________
3. ___________________________________________________________________
4. ___________________________________________________________________

b) List six symptoms of hyperthyroidism. (6 marks)
1. ___________________________________________________________________
2. ___________________________________________________________________
3. ___________________________________________________________________
4. ___________________________________________________________________
5. ___________________________________________________________________
6. ___________________________________________________________________

c) List two causes of hyperthyroidism. (2 marks)
1. ___________________________________________________________________
2. ___________________________________________________________________

d) What would you expect her thyroid function tests to show? (2 marks)
______________________________________________________________________  ___________________________________________________________________

The patient has biochemically confirmed hyperthyroidism. She is rendered euthyroid pharmacologically.

e) List two drugs which she may have been given. (2 marks)
1. ___________________________________________________________________
2. ___________________________________________________________________

Three months later, Louise is referred for a surgical thyroidectomy and attends pre-operative assessment clinic. Louise is concerned about the risk of surgical complications following her thyroidectomy.

f) List four serious post-operative complications specific to thyroidectomy. (4 marks)
1. ___________________________________________________________________
2. ___________________________________________________________________
3. ___________________________________________________________________
4. ___________________________________________________________________