

**DIPLOMA OF FELLOW OF THE ROYAL COLLEGE OF ANAESTHETISTS  
FINAL EXAMINATION**

Tuesday 1<sup>st</sup> September 2009  
9:30 am to 12:30 pm

**Candidates MUST answer all 12 questions.** Candidates will fail the written section if one or more questions on the SAQ paper are not attempted.

All 12 questions carry equal marks, although their pass marks may vary. Candidates who get poor fails in three or more questions will have their examination papers reviewed by the examiners.

Questions are printed in the appropriate coloured book:

1 & 2 in Book A (Blue)	5 & 6 in Book C (Green)	9 & 10 in Book E (Orange)
3 & 4 in Book B (Pink)	7 & 8 in Book D (Yellow)	11 & 12 in Book F (Grey)

One question will be printed on the first page and the second question will be printed half-way through the book. Candidates must write their answer underneath the question in each of their six books. Questions answered in the wrong book will not normally be marked (and the candidate will fail the written section). Please write clearly e.g. a, b, c etc. for which section of the question you are answering.

Where examiners have indicated the way marks are allocated, candidates are advised to spend their time accordingly. 10% of the marks for each question will be awarded for clarity, judgment and the ability to prioritise; marks will be deducted for serious errors.

A (Blue Book)

Question 1

- a) List the indications for using a throat pack during general anaesthesia. (25%)
- b) What are the complications of using a throat pack? (30%)
- c) Describe the strategies that may be adopted to minimise the potential for postoperative complications associated with the use of throat packs. (35%)

Question 2

- a) Define pain. (15%)
- b) Distinguish between acute and chronic pain. (15%)
- c) What symptoms and signs suggest a diagnosis of neuropathic pain? (40%)
- d) What are the possible mechanisms of action of amitriptyline in treating neuropathic pain? (20%)

B (Pink book)

Question 3

- a) What features in the clinical history and examination would suggest a diagnosis of acute aortic dissection? (30%)
- b) Which investigations may be used in making the diagnosis? (20%)
- c) Describe your initial management of a patient with confirmed aortic dissection in the district general hospital environment. (40%)

Question 4

- a) List the potential clinical advantages for the use of nitrous oxide as part of a general anaesthetic. (25%)
- b) List the potential clinical disadvantages of the use of nitrous oxide. (50%)
- c) State the currently accepted safe occupational exposure limit for nitrous oxide. What measures are taken to achieve this within the operating theatre when nitrous oxide is used? (15%)

C (Green book)

Question 5

A recent meta-analysis of the Mallampati examination found that it had a sensitivity of about 60% and a specificity of about 70%.

- a) Rank the levels of scientific proof used to grade medical evidence. (25%)
- b) Explain what is meant by meta-analysis and which parameters ensure a high quality process? (25%)
- c) Explain what is meant by the statistical terms:
  - i) sensitivity (20%)
  - ii) specificity (20%)

## FINAL FRCA

### Question 6

A 20 year old is admitted to the Emergency Department having been involved in a road traffic accident. His Glasgow Coma Score (GCS) is 12. He has a closed fracture of his left femur. No other injuries are evident. A CT scan of his head has revealed a right subdural haematoma, and it has been agreed to transfer him to the regional neurosurgical unit 60 miles away.

- What are your clinical priorities prior to transfer of this patient? (50%)
- What are the indications for intubation and ventilation prior to transfer following a brain injury of this nature? (30%)
- Who should accompany this patient for transfer to the neurosurgical unit? (10%)

D (Yellow book)

### Question 7

- List the effects of chronic alcohol misuse on the nervous, cardiovascular and gastrointestinal (including hepatobiliary) systems. (40%)
- What are the clinical features of the acute alcohol withdrawal syndrome? (25%)
- How would you manage a patient with established acute alcohol withdrawal syndrome? (25%)

### Question 8

- What physiological changes during the maintenance phase of general anaesthesia may require an increase in the  $FiO_2$ ? (40%)
- Following an open cholecystectomy with an opioid-based postoperative analgesic regimen, why might supplemental oxygen be required in the recovery room (20%) and on the ward (up to 72 hours) postoperatively? (30%)

E (Orange book)

### Question 9

- What are i) diagnostic and ii) other clinical features of severe pre-eclampsia? (30%)
- What are the indications for magnesium therapy in severe pre-eclampsia/eclampsia and which administration regimen(s) should be used? (20%)
- What are the signs and symptoms of magnesium toxicity and how should it be managed? (40%)

### Question 10

- List the indications for placement of a double lumen tube in anaesthesia and critical care. (25%)
- List, giving appropriate threshold values for each, the methods of pre-operative respiratory assessment you would use in an adult to decide whether a patient could tolerate lung resection. (25%)
- How would you manage the development of hypoxaemia during one-lung anaesthesia? (40%)

F (Grey book)

### Question 11

- What features in the clinical history and examination would increase your suspicion that an adult patient has obstructive sleep apnoea (OSA)? (20%)
- List the preoperative investigations that may be useful in the assessment of the OSA patient. For each investigation, indicate the abnormality you would expect to find. (30%)
- An adult patient with known OSA is listed for an open cholecystectomy. How will the presence of OSA influence your perioperative management of this patient? (40%)

### Question 12

- Outline the clinical presentation of malignant hyperpyrexia associated with anaesthesia. (30%)
- Describe your management in theatre. (50%)
- What is the mechanism of action of dantrolene in this condition? (10%)

**THE ROYAL COLLEGE OF ANAESTHETISTS**  
**DIPLOMA OF FELLOW OF THE ROYAL COLLEGE OF ANAESTHETISTS**  
**FINAL EXAMINATION**

Tuesday 21st April 2009  
9:30 am to 12:30 pm

**Candidates MUST answer all 12 questions** - Candidates who do not will fail.

All 12 questions carry equal marks, although their pass marks may vary. Candidates who get poor fails in three or more questions will not be awarded an overall SAQ mark higher than 1+.

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A (Blue book)

**Question 1**

A 45 year-old woman is having a paravertebral block inserted prior to general anaesthesia for breast surgery.

- List the possible causes of sudden collapse in this patient. (20%)
- What symptoms and signs suggest local anaesthetic toxicity? (20%)
- Briefly explain the pharmacological basis of severe local anaesthetic toxicity. (15%)
- What is the immediate treatment of local anaesthetic toxicity? (35%)

**Question 2**

- Name 4 drugs that may be used to treat thyrotoxicosis and briefly outline their mechanism of action (40%)
- What are the main anaesthetic priorities in assessing a patient with treated thyrotoxicosis who is presenting for thyroid surgery? (20%)
- List the procedure-specific complications that may present in the post-operative thyroidectomy patient. (30%)

B (Pink book)

**Question 3**

- Describe the pain pathways associated with the 1<sup>st</sup> and 2<sup>nd</sup> stages of labour. (40%)
- Explain how and why the nature of the pain experienced changes as labour progresses. (20%)
- Why is it essential to achieve a higher dermatomal level of regional block for Caesarean section than for analgesia in labour. (20%)
- Why do you sometimes observe bradycardia during regional anaesthesia for Caesarean section? (10%)

**Question 4**

- Describe how atrial fibrillation may present. (10%)
- List 5 causes of atrial fibrillation. (25%)
- What principles underlie the management of atrial fibrillation? (25%)
- What are the main anaesthetic considerations when performing elective Direct Current Cardioversion? (30%)

C (Green Book)

**Question 5**

- In which clinical situations would you consider total intravenous anaesthesia (TIVA) advantageous? Explain the benefits in each situation. (50%)
- List the disadvantages of TIVA and explain how these may be minimised. (40%)

**Question 6**

With regard to the recognition and management of Acute Asthma in adults:

- List the clinical features of acute asthma. (20%)
- What clinical features would suggest that the severity of the asthma is becoming life threatening? (20%)
- What is the initial management of a patient presenting to the Emergency department with acute severe asthma. (50%)

D (Yellow book)

Question 7

A 4 year-old (20kg) girl is admitted with acute appendicitis and is scheduled for urgent surgery. She has been vomiting for two days and is pyrexial 38.7 °C. Her pulse rate is 170 beats per minute with a capillary refill time of 4 seconds.

- a) Describe the perioperative intravenous fluid management of this case (60%)
- b) Outline the metabolic & clinical complications that can occur with inappropriate intravenous crystalloid therapy. (30%)

Question 8

An adult patient is scheduled for shoulder surgery under an interscalene brachial plexus block.

- a) Outline the possible unwanted neurological sequelae that may occur with interscalene block and their associated symptoms & signs? (60%)
- b) What steps may be taken while performing the block to reduce the incidence of these problems? (30%)

E (Orange book)

Question 9

- a) List the anaesthetic factors that predispose to perioperative dental damage (25%).
- b) List the patient-related factors that predispose to perioperative dental damage (25%)
- c) A 22 year-old man anaesthetised by a colleague awakens following tonsillectomy and complains that an upper incisor tooth has broken off during the operation. What is your management of this situation? (40%)

Question 10

You are called to see a 25 year-old male who had a traumatic below knee amputation 24 hours ago. He is using Patient Controlled Analgesia (PCA) with intravenous morphine and was comfortable until two hours ago when he started experiencing severe pain.

- a) Why might his pain control have become inadequate and how would you re-establish optimal pain control? (45%)
- b) What are the characteristic features of phantom limb pain? (20%)
- c) What management options are available for phantom limb pain? (25%)

F (Grey book)

Question 11

- a) Describe in detail the procedures you should use to decontaminate your hands before beginning a shift on ITU? (50%)
- b) What hand decontamination procedures can be used when moving between patients? (10%)
- c) What additional hand decontamination procedures can be used when moving between patients if the previous patient has *Clostridium difficile*? What is the reason? (10%)
- d) How can you reduce the irritant and drying effects of hand cleansing preparations? (20%)

Question 12

Following initial resuscitation and treatment for a crush injury to the lower limbs, a previously fit 55 year-old patient is noted to have a urine output of 15 ml/hr. The urine is noted to be very dark. Blood pressure and pulse are within normal limits. Serum creatinine is 200 µmol/litre and potassium is 5.7 mmol/litre.

- a) What is the most likely diagnosis? (10%)
- b) What investigations would be appropriate? (30%)
- c) How should this condition be managed? (50%)

DIPLOMA OF FELLOW OF THE ROYAL COLLEGE OF ANAESTHETISTS  
FINAL EXAMINATIONTuesday 21<sup>st</sup> October 2008  
9:30 am to 12:30 pm

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A (Blue book)

Question 1

What are the important organisational (40%) and clinical (50%) considerations that govern the anaesthetic management of patients with morbid obesity?

Question 2

- Describe the surface anatomical landmarks for (i) the anterior (Beck's) and (ii) one posterior approach to sciatic nerve block. (50%)
- What practical advantages and disadvantages would you consider when choosing between these two approaches in an individual patient? (20%)
- List the complications that may result from this block. (20%)

B (Pink book)

Question 3

A parturient, (Gravida 2 Para 1), arrives at a DGH in labour with signs of fetal distress at 38 weeks gestation. She has had her antenatal care elsewhere. She refuses a regional technique and a decision is made to proceed with an emergency caesarean section under general anaesthetic. She is known to have a medium-size secundum atrial septal defect (ASD), is currently asymptomatic and has turned down cardiac surgery. She is followed up regularly by her cardiologist and has had a recent echocardiogram confirming the diagnosis.

- Describe your understanding of the cardiac pathophysiology of ASD. (20%)
- What are your considerations specific to the cardiac condition in this patient?
  - Preoperatively (20%)
  - General anaesthetic principles focused on the cardiac condition (30%)
- Immediately following delivery by caesarean section under general anaesthesia, the SpO<sub>2</sub> falls to 70%. You confirm that ventilation is not an issue. What are the possible causes? What are your immediate actions in theatre? (20%)

Question 4

- What complications may arise from cannulation of the subclavian vein? (45%)
- What precautions should be used to minimise central venous catheter related bloodstream infections? (45%)

C (Green book)

Question 5

Describe how you would design and conduct a prospective randomised study to investigate whether surgical face-masks worn in theatre by medical and nursing staff prevent postoperative wound infections. Include: a. Study design (40%), b. Outcomes to be measured (20%), c. Plan of analysis (15%), d. Advantages and limitations (15%).

*Please turn over*

## FINAL FRCA

### Question 6

- a) What are the most important risk factors for postoperative nausea and vomiting in adults? (40%)

Some anti-emetics are associated with an acute dystonic reaction:

- b) What is an acute dystonic reaction? (10%)  
c) How may it present? (10%)  
d) Give one class of anti-emetic that may precipitate an acute dystonic reaction. (5%)  
e) What other conditions should be considered in the differential diagnosis? (10%)  
f) Describe your specific treatment of an acute dystonic reaction. (10%)  
g) What are the most frequent adverse effects of ondansetron? (5%)

D (Yellow book)

### Question 7

A 70 kg, 30 year-old man presents with burns following a house fire. The burns are confined to his torso and upper limbs, but exclude his head and neck.

- a) State the Parkland formula used for burns fluid resuscitation. (10%)  
b) His burns are estimated at 40% of his body surface area. Using the Parkland formula, what volume of which fluid will he require in the first 8 hours after injury? (10%)  
c) What additional fluids in excess of the volume predicted in (b) might he require and why? (25%)  
d) What monitoring and investigations are required in the first 24 hours? (45%)

### Question 8

- a) What is fat embolism syndrome and what is its clinical presentation? (50%)  
b) List the clinical conditions that may predispose to fat embolism. (20%)  
c) What measures may be used to minimise and treat fat embolism? (20%)

E (Orange book)

### Question 9

- a) What criteria would suggest to you a brain stem dead patient may be suitable as a potential donor of organs? (25%)  
b) What are the pathophysiological changes that can occur following brain stem death? (30%)  
c) How would you manage a potential heart-beating organ donor following brain stem testing prior to donation? (35%)

### Question 10

All health care professionals have a responsibility to act if they suspect that a child has been subjected to physical abuse.

- a) In what situations may the anaesthetist encounter possible child abuse? (20%)  
b) List clinical features that would arouse suspicion that physical child abuse has occurred. (40%)  
c) What should the anaesthetist do if they suspect child abuse has taken place? (30%)

F (Grey book)

### Question 11

- a) Who in a Trust are responsible for minimising the risk of transmission of infection between patients in the operating theatre? (15%)  
b) What general practices may be employed in the operating theatre to minimise the risk of transmission of infection between patients? (30%)  
c) What specific considerations determine choice of single use or reusable equipment in the context of airway equipment and anaesthetic breathing systems? (45%)

### Question 12

A 72 year-old female with longstanding severe rheumatoid arthritis presents for total knee replacement.

- a) Describe the clinical features of this disease relevant to anaesthesia. (50%)  
b) List the preoperative investigations you might consider. For each investigation state the indications in this patient (e.g. routine or in response to certain findings) and briefly outline the derangements that may be associated with rheumatoid arthritis. (40%)

**THE ROYAL COLLEGE OF ANAESTHETISTS**  
**DIPLOMA OF FELLOW OF THE ROYAL COLLEGE OF ANAESTHETISTS**  
**FINAL EXAMINATION**

Tuesday 22<sup>nd</sup> April 2008  
9:30 am to 12:30 pm

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A (Blue book)

Question 1

- a) Describe the anatomy of the thoracic paravertebral space. (35%)
- b) What are the indications for paravertebral nerve blockade? (25%)
- c) List the complications of a paravertebral nerve block. (30%)

Question 2

- a) In the Confidential Enquiry into Maternal and Child Health covering the period 2003-2005, what risk factors were identified as contributing to maternal death? (40%)
- b) What are the principle causes of direct maternal death in the United Kingdom? (25%)
- c) What clinical features would you include in a ward-based Early Warning Scoring system designed to alert staff to a deterioration in maternal well being? (25%)

B (Pink book)

Question 3

- a) Describe the factors that may lead to i) venous air embolism (20%) and ii) arterial air embolism. (20%)
- b) What is paradoxical air embolism and how does it occur? (20%)
- c) Explain the physiological basis for the use of capnography in the detection of venous air embolism. (30%)

Question 4

A 4 year old (20 kg) is admitted with acute appendicitis and is scheduled for urgent surgery. She has been vomiting for 2 days, is pyrexial, has a tachycardia of 170 bpm and prolonged capillary refill.

- a) Describe the perioperative fluid management of this case using intravenous crystalloids. (60%)
- b) Outline the complications that can occur with inappropriate intravenous crystalloid therapy. (30%)

C (Green book)

Question 5

- a) Describe a method of preoxygenation prior to induction of general anaesthesia. (20%)
- b) What is the physiological basis of preoxygenation prior to anaesthesia? (30%)
- c) How could the adequacy of preoxygenation be assessed? (10%)
- d) What are the advantages and disadvantages of preoxygenating a fit adult? (30%)

*Please turn over*

## FINAL FRCA

### Question 6

- a) Describe the symptoms and signs of Complex Regional Pain Syndrome. (50%)
- b) How many symptoms and signs are required to make the diagnosis? (20%)
- c) What are the other pre-requisites for the diagnosis? (20%)

D (Yellow book)

### Question 7

- a) If neuromuscular block has been achieved during general anaesthesia using rocuronium explain the mechanism of spontaneous recovery from neuromuscular blockade. (15%)
- b) What classes of drugs could be used to accelerate the recovery from rocuronium? (10%)
- c) How do the classes of drugs in part (b) work? (15%)
- d) What are the advantages and disadvantages of the classes of drugs identified in part (b)? (50%)

### Question 8

- a) The prevalence of asthma in developed countries has doubled in the last 20 years. List the factors that may have contributed to this increase. (20%)
- b) What are the causes of acute bronchospasm during general anaesthesia in a patient with mild asthma? (25%)
- c) Outline your immediate management of severe acute bronchospasm during general anaesthesia in an intubated patient. (45%)

E (Orange book)

### Question 9

- a) What strategies are available and appropriate to decrease preoperative anxiety in children for day case surgery? (45%)

A 12 year old girl is admitted for prominent ear correction as a day case. She is very anxious and uncooperative when you see her preoperatively. She will not engage with any attempts to calm her down and subsequently refuses to cooperate with anaesthetic induction. However, her mother is insistent that you go ahead with the anaesthetic.

- b) How would you proceed in this scenario? Explain your reasoning. (45%)

### Question 10

- a) A patient presents to the Emergency Department with a suspected ruptured abdominal aortic aneurysm. What are the priorities in your preoperative management? (40%)
- b) The consultant vascular surgeon would like to repair the ruptured aortic aneurysm. Describe your anaesthetic management in the operating theatre. (50%)

F (White book)

### Question 11

While suturing a chest drain in a conscious adult patient in the Emergency Department you sustain a needlestick injury to your hand.

- a) What immediate actions should be undertaken? (25%)
- b) After the immediate management, what further steps should be undertaken? (40%)
- c) What additional steps may be necessary if exposure to one of the blood borne viruses is suspected or confirmed? (25%)

### Question 12

- a) What are the causes of acute pancreatitis? (20%)
- b) How may acute pancreatitis present? (20%)
- c) Outline the principles of management of acute pancreatitis in a ventilated patient. (30%)
- d) What complications may develop? (20%)



**THE ROYAL COLLEGE OF ANAESTHETISTS**

**DIPLOMA OF FELLOW OF THE ROYAL COLLEGE OF ANAESTHETISTS  
FINAL EXAMINATION**

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9:30 am to 12:30 pm

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**A (Blue book)**

Question 1

- What complications may arise from cannulation of the subclavian vein? (45%)
- What precautions should be used to minimise central venous catheter related bloodstream infections? (45%)

Question 2

- List the specific problems and risks associated with a twin pregnancy. (45%)
- What are the important considerations and options when planning the anaesthetic management for the delivery of twins around term? (45%)

**B (Pink book)**

Question 3

Surgery performed at an incorrect anatomical site is rare but devastating.

- What organisational recommendations (15%), together with what individual steps (60%), could be taken to reduce the possibility of surgery being performed at an incorrect anatomical site?
- What are the responsibilities of the anaesthetist in these procedures? (15%)

Question 4

You are asked to see a 2-year-old boy in the Emergency Department who has stridor and a barking cough. He is febrile and is sitting upright with suprasternal and subcostal recessions.

- What is stridor and what does it indicate? (15%)
- List the possible causes of stridor in a child of this age, indicating which is the most likely in this case. (35%)
- Outline your initial management of this child in the Emergency Department. (40%)

*Please turn over*

## **FINAL FRCA**

### **C (Green book)**

#### Question 5

- What clinical features would suggest to you that a patient has a pleural fluid collection? (45%)
- Describe investigations that assess the size (30%) and nature (15%) of a pleural fluid collection, and indicate how results of each can guide management.

#### Question 6

- What are the clinical features of acquired myasthenia gravis? (25%)
- What tests are available to confirm the diagnosis? (15%)
- What are the important aspects of the management of a patient with generalised myasthenia gravis presenting for laparoscopic cholecystectomy? (50%)

### **D (Yellow book)**

#### Question 7

- What are the important safety features incorporated into the design of a medical gas cylinder and valve? (45%)
- How would you normally identify the content of a gas cylinder? (25%)
- What information does the pressure gauge on a nitrous oxide cylinder provide and how would you establish the amount of nitrous oxide remaining in a cylinder? (20%)

#### Question 8

- List patient-related risk factors that make a patient susceptible to venous thrombo-embolism. (Do not list surgery-related risk factors.) (30%)
- What measures are recommended to minimise the risk of venous thrombo-embolism in adult surgical inpatients? (Do not list all the interventions that have been investigated.) (50%)
- Before discharge from hospital, what advice would you give to a patient at risk? (10%)

### **E (Orange book)**

#### Question 9

While suturing a chest drain in an adult conscious patient in the Emergency Department you sustain a needlestick injury to your hand.

- What immediate actions should be undertaken? (25%)
- After the immediate management, what further steps should be undertaken? (40%)
- What additional steps may be necessary if exposure to one of the blood borne viruses is suspected or confirmed? (25%)

#### Question 10

A 45 year old man is admitted directly from the Emergency Department to the Intensive Care Unit with oliguria and respiratory distress presumed to be secondary to severe acute pancreatitis.

- What assessments and investigations might be used to support this diagnosis and help grade the severity? (30%)
- Outline your treatment plan for the first 48 hours. (50%)
- What is the expected mortality and the main cause of death in severe acute pancreatitis? (10%)

### **F (White book)**

#### Question 11

- What are the important considerations in the preoperative assessment of a hypertensive patient presenting for elective surgery? (50%)
- Outline the perioperative risks associated with hypertension and their management. (40%)

#### Question 12

- List the principal causes of delayed recovery of consciousness after anaesthesia. (40%)
- Describe your approach to the management of such a patient with prolonged unconsciousness. (50%)

## **FINAL FRCA**

### **THE ROYAL COLLEGE OF ANAESTHETISTS**

#### **DIPLOMA OF FELLOW OF THE ROYAL COLLEGE OF ANAESTHETISTS FINAL EXAMINATION**

8<sup>th</sup> May 2007  
9:30 am to 12:30 pm

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A (Blue book)

#### **Question 1**

- What is informed consent? (30%)
- Give two examples of problems that you may experience gaining informed consent for anaesthesia and discuss solutions for these. (35%)
- How do you explain the concept of risk to a member of the public? (25%)

#### **Question 2**

- List the key points in the management of an unconscious (Glasgow Coma Scale 6) trauma patient before transfer to the CT scanner. There are no other apparent injuries but the cervical spine cannot be cleared. (50%)
- Discuss the safe transfer of this patient to a CT scanner in the same building. (20%)
- List the specific problems that may be encountered whilst in this environment. (20%)

B (Pink book)

#### **Question 3**

- Why can touching a piece of faulty domestic electrical apparatus cause ventricular fibrillation? (25%)
- What is microshock and how does this cause ventricular fibrillation? (15%)
- List the factors which make an anaesthetised patient in the operating room at particular risk from electrical hazards. (10%)
- What precautions are taken to reduce electrical hazards in the operating room? (40%)

#### **Question 4**

A 23 year old female presents with acute urinary retention caused by a central L5/S1 intervertebral disc prolapse. You are asked to provide general anaesthesia for lumbar microdiscectomy. She weighs 160kg and has a Body Mass Index of 53.

- What arrangements with the operating theatre staff will you make that are specific to this case? (30%)
- Outline your approach to airway management throughout the case. (40%)
- Indicate the principles of management of postoperative analgesia in this patient. (20%)

*Please turn over*

C (Green book)

**Question 5**

- a) List the normal anatomical features of young children (< 3 years old) which may adversely affect airway management. (25%)
- b) What airway problems may occur due to these anatomical features? (30%)
- c) Describe how these problems are overcome in clinical practice. (35%)

**Question 6**

- a) How are implantable cardiac pacemakers and implantable cardioverter defibrillators classified? (25%)
- b) What information should be sought relating to these devices preoperatively? (30%)
- c) What precautions should you take perioperatively when anaesthetising patients with these devices, where the use of surgical diathermy / electrocautery is anticipated? (35%)

D (Yellow book)

**Question 7**

- a) What non-invasive methods can be used to measure blood pressure? (30%)
- b) How do most automated non-invasive cuff techniques measure blood pressure? (40%)
- c) What are the causes of errors commonly encountered in non-invasive blood pressure measurement systems? (20%)

**Question 8**

- a) Outline the clinical presentation of malignant hyperpyrexia associated with anaesthesia. (30%)
- b) Describe your management in theatre. (50%)
- c) What is the mechanism of action of Dantrolene in this condition? (10%)

E (Orange book)

**Question 9**

- a) Describe the anatomy of an intercostal nerve. (25%)
- b) How does this influence your technique of intercostal nerve blockade for a fractured rib? (35%)
- c) List the complications that may arise and explain the anatomical reasons for these complications. (30%)

**Question 10**

- a) List the important causes of hyperkalaemia. (25%)
- b) What are the clinical effects of hyperkalaemia? (15%)
- c) Describe your treatment of a patient with critical hyperkalaemia. (50%)

F (White book)

**Question 11**

- a) What information is available from a thermodilution pulmonary artery catheter? (35%)
- b) How can this information be used in the management of a critically ill, hypotensive patient following laparotomy for faecal peritonitis? (55%)

**Question 12**

Three common regimens used to reduce the incidence of hypotension seen during spinal anaesthesia for caesarean section are:

- 1) Giving fluid before the spinal (preload) (30%)
- 2) Giving fluid at the time of the spinal (coload or cohydration) (10%)
- 3) Drug administration (50%)

Describe each technique and outline the physiological and pharmacological basis of each regimen.

## **FINAL FRCA**

### **THE ROYAL COLLEGE OF ANAESTHETISTS**

#### **DIPLOMA OF FELLOW OF THE ROYAL COLLEGE OF ANAESTHETISTS FINAL EXAMINATION**

24<sup>th</sup> October 2006  
9:30 am to 12:30 pm

**Candidates MUST answer all 12 questions** - Candidates who do not will fail. Answers written in the incorrect book will not be marked.

All 12 questions carry equal marks. Answer each group of questions in the appropriately coloured book  
1-3 Blue 4-6 Pink 7-9 Green 10-12 Yellow

Start each question on a new page. Indicate clearly which sub-section of the question is being answered in multipart questions. Where examiners have indicated the way marks are allocated, candidates are advised to spend their time accordingly.

10% of the marks for each question will be awarded for clarity, judgement and the ability to prioritise; marks will be deducted for serious errors.

#### **A (Blue Book)**

##### **Question 1**

A 90 year old woman with a fractured neck of femur is scheduled for a dynamic hip screw. She weighs 45 kg. She is in atrial fibrillation and takes digoxin 125 micrograms, warfarin 5 mg and furosemide 20 mg daily. Her blood pressure is 150/90 mmHg and heart rate 80 beats per minute.

- (a) What underlying medical conditions may have caused her fall? (30%)
- (b) What are the advantages and disadvantages of general versus regional anaesthesia in this patient? (30%)
- (c) What would you do about her anticoagulation? (15%)
- (d) How could her current medication affect her anaesthetic management? (15%)

##### **Question 2**

Regarding caudal anaesthesia in children:

- (a) What anatomical features are important to consider when performing the block (caudal) safely? (30%)
- (b) What are the contraindications? (20%)
- (c) What are the problems and complications? (20%)
- (d) What constraints limit the effectiveness of the block and how can they be overcome? (20%)

##### **Question 3**

- (a) What are the main types of studies that must be done on a drug in order to obtain marketing authorisation (formerly called a product licence) from the Medicines and Healthcare products Regulatory Agency (MHRA)? (25%)
- (b) Define what is meant by 'a double blind randomised controlled trial with adequate power', and explain the reasons for these methods? (50%)
- (c) Under what circumstances might an observational study be an acceptable method of investigation? (15%)

#### **B (Pink Book)**

##### **Question 4**

- (a) Define explicit and implicit awareness during general anaesthesia. (10%)
- (b) What may increase the likelihood of awareness? (40%)
- (c) List the techniques used to assess depth of anaesthesia and comment on their value. (40%)

*Please turn over*

**Question 5**

- (a) What methods are available for measuring intra abdominal pressure (IAP) in a patient in intensive care? Give details of one technique. (20%)
- (b) What are the effects of abdominal compartment syndrome (ACS)? (50%)
- (c) Describe the significance of the intra abdominal pressure value and the principles of the management of abdominal compartment syndrome. (20%)

**Question 6**

An adult patient requires angiography and interventional radiology for a cerebral aneurysm.

- (a) What potential problems may be encountered anaesthetising a patient in the Angiography Suite? (30%)
- (b) What are the key Principles of Anaesthesia in this patient? (60%)

**C (Green Book)****Question 7**

- (a) Explain the possible adverse consequences of hypotension during anaesthesia. (35%)
- (b) What factors may increase the morbidity of hypotension? (30%)
- (c) What principles would help you decide on the lowest acceptable blood pressure in each of the following patients undergoing anaesthesia for major abdominal surgery? The preoperative blood pressure was 140/80 mmHg and there is no requirement for hypotensive anaesthesia. (25%)
- 1) A fit healthy 35 year old
  - 2) A fit healthy 75 year old
  - 3) A treated hypertensive 75 year old

**Question 8**

Concerning the cardiovascular risk evaluation for elective non-cardiac surgery;

- a) Identify "high risk" cardiovascular patient-specific factors that MUST be evaluated and treated before elective surgery. (50%)
- b) Identify "intermediate and low risk" cardiovascular and non cardiovascular patient-specific factors that may need further investigation and treatment before elective surgery. (40%)

**Question 9**

Surgery performed at an incorrect anatomical site is rare but devastating.

- (a) What organisational recommendations (15%), together with what individual steps (60%), could be taken to reduce the possibility of surgery being performed at an incorrect anatomical site?
- (b) What are the responsibilities of the anaesthetist in these procedures? (15%)

**D (Yellow Book)****Question 10**

You are scheduled to anaesthetise a 15 year old girl for correction of her idiopathic scoliosis.

What are the key (a) preoperative (25%) (b) intraoperative (40%) and (c) postoperative (25%) issues in your anaesthetic management of this patient?

**Question 11**

A patient has died unexpectedly during a routine anaesthetic for minor surgery.

- (a) What immediate administrative actions should be considered following such an event? (65%)
- (b) What steps should be taken to support all the people concerned? (25%)

**Question 12**

A 60 year old male was admitted to the ICU 10 days previously with septic shock and acute lung injury following anastomotic dehiscence of an anterior colonic resection. He was recovering well on the HDU until 48 hours ago when his condition deteriorated with abdominal distension and diarrhoea. It is suspected that he has developed a new systemic inflammatory response syndrome.

- (a) How should the patient be assessed clinically? (40%)
- (b) List the key initial investigations in this patient? (50%)

**THE ROYAL COLLEGE OF ANAESTHETISTS**  
**DIPLOMA OF FELLOW OF THE ROYAL COLLEGE OF ANAESTHETISTS**  
**FINAL EXAMINATION**

9th May 2006  
9:30am to 12:30pm

**Candidates MUST answer all 12 questions** - candidates who do not will fail. All 12 questions carry equal marks. Answer each group of questions in the appropriately coloured book: questions **1-3 Blue**; questions **4-6 Pink**; questions **7-9 Green**; questions **10-12 Yellow**. Start each question on a new page. Indicate clearly which sub-section of the question is being answered in multipart questions. Where examiners have indicated the way marks are allocated candidates are advised to spend their time accordingly. Marks will be awarded for clarity, judgement and the ability to prioritise and deducted for serious errors. An examiner will be present during the time allowed for this paper for consultation in case any question should not appear clear.

**A (Blue Book)**

**Question 1**

- a) What are the indications for "one lung anaesthesia"? (30%)
- b) List the methods of pre-operative assessment you would use to decide whether an adult could tolerate "one lung anaesthesia". (30%)
- c) How could you manage the development of hypoxaemia during "one lung anaesthesia"? (40%)

**Question 2**

- a) List the different mechanisms for transport of drugs across a cell membrane. (20%)
- b) What factors influence the rate of transfer of drugs across the placenta? (40%)
- c) How do these factors affect the transfer of pethidine (meperidine), muscle relaxants and local anaesthetics across the placenta? (40%)

**Question 3**

- a) What are the adverse effects of abdominal laparoscopy? (75%)
- b) How may these effects be minimised? (25%)

**B (Pink Book)**

**Question 4**

A 70 year old retired airline pilot is scheduled for a total knee replacement. Apart from his knees he says he has been "fit for as long as I can remember". Relevant findings on examination are a regular pulse, palpable at the wrist but slow rising and of low volume. On auscultation he has a harsh ejection systolic murmur best heard at the 2<sup>nd</sup> intercostal space on the right sternal edge. The murmur radiates into his neck. His apex beat is displaced 2cm laterally and is easily palpable. PA Chest Xray shows a cardiothoracic ratio of 0.5. Examination of the ECG shows the S wave in lead V1 and R wave in lead V5 summate to 45 mm. His blood pressure is 135/90 and he is on no antihypertensive medication.

- a) What is the SINGLE most likely cause of the murmur in this patient? (10%)
- b) What is the most likely aetiology? (10%)
- c) What symptoms are classically associated with this lesion? (30%)
- d) What investigations are available to assess the severity of this lesion? (20%)
- e) What are the expected findings of the investigations in the presence of a lesion classified as severe? (30%)

### Question 5

- Summarise the key principles of consent for anaesthesia. (60%)
- Which patients may be unable to give consent (10%) and how is this situation approached? (30%)

### Question 6

- Briefly state the basic neurological principle of the apnoea test component of Brain Stem Death (BSD) testing. (30%)
- What value must be achieved and what factors determine the time of achievement of the threshold  $P_aCO_2$ ? (40%)
- Describe the physiology of maintenance of oxygenation during the apnoea test. (30%)  
(You may assume criteria for testing for BSD have been fulfilled.)

## C (Green Book)

### Question 7

You have been called to attend a patient in ICU urgently because he has become agitated, hypertensive and acutely hypoxic. The patient is suffering from Guillian Barré syndrome and has a tracheostomy. He is being maintained on 30% oxygen, 8cm H<sub>2</sub>O CPAP. The percutaneous tracheostomy was performed 18 hours ago without complication.

- List possible causes for his acute hypoxia. (20%)
- Describe your immediate assessment. (45%)
- How would you manage an airway problem in this patient? (35%)

### Question 8

- Briefly describe your technique for performing a deep cervical plexus block for carotid endarterectomy under local anaesthesia. (35%)
- List the complications of a deep cervical plexus block. (35%)
- List the advantages and disadvantages of performing a carotid endarterectomy under regional anaesthesia. (30%)

### Question 9

A consultant obstetrician has asked you to review a woman in her first pregnancy in the anaesthetic ante-natal assessment clinic. Her body mass index is 45kg.m<sup>-2</sup>. There are no other abnormalities and at 32 weeks gestation she is hoping for a vaginal delivery.

Write a summary recording the details you would wish to cover during the appointment and your recommendations for her management when she is admitted in labour.

## D (Yellow Book)

### Question 10

- Define pain. (15%)
- Distinguish between acute and chronic pain. (15%)
- What symptoms and signs suggest a diagnosis of neuropathic pain? (40%)
- What are the possible mechanisms of action of amitriptyline in treating neuropathic pain? (30%)

### Question 11

- What methods are used to measure blood pressure non-invasively? (35%)
- How do most automated non-invasive cuff techniques measure blood pressure? (45%)
- What are the common errors encountered in non-invasive blood pressure measurement systems? (20%)**

### Question 12

A 20 year old male was assaulted and sustained a bilateral fractured mandible which requires surgical fixation. Following the assault he was unconscious for 5 minutes. You are asked to see him the next day. He has no other injuries.

- Outline your preoperative assessment of this patient. (55%)
- What are anaesthetic options for surgery? (45%)



## FINAL FRCA

### THE ROYAL COLLEGE OF ANAESTHETISTS

#### DIPLOMA OF FELLOW OF THE ROYAL COLLEGE OF ANAESTHETISTS

#### FINAL EXAMINATION

25th October 2005

9:30am to 12:30pm

*Candidates are required to answer all twelve questions. Questions numbered 1 - 3 must be answered in Book A (Blue), 4 - 6 in Book B (Pink), 7 - 9 in Book C (Green) and 10 - 12 in Book D (Yellow). **Candidates who fail to answer all twelve questions will not pass the Examination.** All 12 questions carry equal marks. In multipart questions, the examiners have indicated the way in which marks are allocated by providing the maximum percentage mark available at the end of the part. Candidates are advised to allocate their time following this guidance. Candidates are informed that an examiner will be present during the time allowed for this paper for consultation in case any question should not appear clear.*

#### Section A (Blue Book)

Q1 What measures can be taken to prevent venous thromboembolism in a healthy 70 year old female scheduled to have a total knee replacement ? (20%)

Describe the pros and cons of each of these measures. (80%)

Q2 What tests of lung function can be used to predict whether a patient will tolerate a pulmonary resection ? (60%)

Indicate minimum values for lobectomy and pneumonectomy. (40%)

Q3 You are asked to review an unkempt middle aged man who was found semi-conscious in a hostel. He smells of alcohol. His arterial blood gases breathing oxygen at 4 L/min via a Hudson mask are pH 6.94, PaCO<sub>2</sub> 2.9 kPa, HCO<sub>3</sub> 4.7 mmol/l, BE -26.6 mmol/l and PaO<sub>2</sub> 26.8 kPa.

What are the possible causes of acidosis in this patient ? (40%)

How may laboratory tests help you reach a diagnosis ? (30%)

Very briefly what treatments would you institute for each cause ? (30%)

#### Section B (Pink Book)

Q4 A 75 year old man has terminal prostate cancer with multiple metastases. A metastatic lesion at L5 is causing severe back pain but no neurological symptoms or signs. Modified release Morphine 60mg twice daily has marginally reduced the pain but caused nausea and sedation.

Discuss a care plan for this patient's current symptoms.

Q5 When considering Total Parenteral Nutrition (TPN) give an estimate of the daily requirements for calories, protein, fat and carbohydrate in a 70 kg critically ill adult? (30%)

What volume of water is usually prescribed? (10%)

What other components should be given? (10%)

List the potential complications and disadvantages of the administration of TPN. (50%)

Q6 What are the pharmacokinetic (45%), pharmacodynamic (45%) and physical (10%) properties required of a drug intended for use in total intravenous anaesthesia?

### **Section C (Green Book)**

Q7 List the causes of mortality directly and indirectly related to anaesthesia in the UK triennial maternal mortality (CEMACH) report (2000-2002). (40%)  
What are the concerns associated with general anaesthesia for delivery in the obstetric patient ? (60%)

Q8 You are scheduled to anaesthetise a 15 year old girl with idiopathic scoliosis.  
What are the key issues in your anaesthetic management of this patient. ?  
(marks - preoperative 30%, intraoperative 40%, postoperative 30%)

Q 9 Describe the perioperative fluid and electrolyte management of a 6 month old child presenting in casualty with abdominal distention requiring urgent laparotomy.

### **Section D (Yellow Book)**

Q10 Describe, with the aid of a diagram if you wish, the anatomy of the anterior aspect of the wrist. (50%)  
Describe how this knowledge is used to block the nerves on the anterior aspect of the wrist. (50%)

Q11 What information may be obtained from preoperative, resting transthoracic echocardiography in adults ? (60%)  
What are the limitations of this investigation ? (40%)

Q12 Describe the anaesthesia and analgesia considerations in a child presenting for elective day case orchidopexy.

## FINAL FRCA

### THE ROYAL COLLEGE OF ANAESTHETISTS

#### DIPLOMA OF FELLOW OF THE ROYAL COLLEGE OF ANAESTHETISTS

#### FINAL EXAMINATION

17<sup>th</sup> May 2005  
9:30am to 12:30pm

*Candidates are required to answer all twelve questions. Questions numbered 1 - 3 must be answered in Book A (Blue), 4 - 6 in Book B (Pink), 7 - 9 in Book C (Green) and 10 - 12 in Book D (Yellow). **Candidates who fail to answer all twelve questions will not pass the Examination.** All 12 questions carry equal marks. In multipart questions, the examiners have indicated the way in which marks are allocated by providing the maximum percentage mark available at the end of the part. Candidates are advised to allocate their time following this guidance. Candidates are informed that an examiner will be present during the time allowed for this paper for consultation in case any question should not appear clear.*

#### SECTION A (Book A - blue)

1. How is ventilator-associated pneumonia (VAP) diagnosed? (20%)  
Explain the physical (50%), positional (15%) and pharmacological (15%) strategies that have been advocated for its prevention?
2. What is the physiological basis of preoxygenation for anaesthesia? (40%)  
Describe a method of preoxygenation and how you would assess its adequacy. (35%)  
What are the advantages and disadvantages of preoxygenating a fit adult? (25%)
3. Describe two assessment tools used for the measurement of acute pain in adults. (30%)  
Describe the McGill pain questionnaire used to assess chronic pain. (20%)  
Include the strengths and weaknesses of each of the above. (30%)  
Why do assessment tools used in acute and chronic pain differ? (20%)

#### SECTION B (Book B - pink)

4. List the nerves which supply the eye and its muscles. Briefly describe the relevant function of each nerve. (40%)  
What specific considerations would you take into account when providing general anaesthesia for adult vitreo-retinal surgery? (60%)
5. An otherwise fit patient requires nephrectomy for a large solitary renal tumour.  
What surgical factors might influence your conduct of the anaesthetic?
6. What perioperative measures can be taken to minimize non-autologous red cell transfusion in a patient undergoing elective surgery?

#### SECTION C (Book C - Green)

7. What are the endocrine causes of secondary hypertension? (25%)  
What is the pharmacological management of each of these endocrine conditions? (35%)  
State the mechanism of action of each drug. (40%)
8. Which patients are at increased risk of infection related to an epidural catheter? (30%)  
What symptoms and signs suggest the development of an epidural abscess? (30%)  
What investigations would be definitive in initiating further management? (20%)  
What should this be? (20%)

9. What are the important organisational (40%) and clinical (60%) factors which govern the anaesthetic management of patients over 80 years of age?

#### SECTION D (Book D - Yellow)

10. A one day old term neonate has arrived at your regional paediatric intensive care unit. A congenital diaphragmatic hernia has been diagnosed. The baby is already intubated and receiving artificial ventilation.

Outline, with reasons the principles of preoperative management.

11. You are asked to see a 45 year old man in the Emergency Department who has suffered 30% burns.

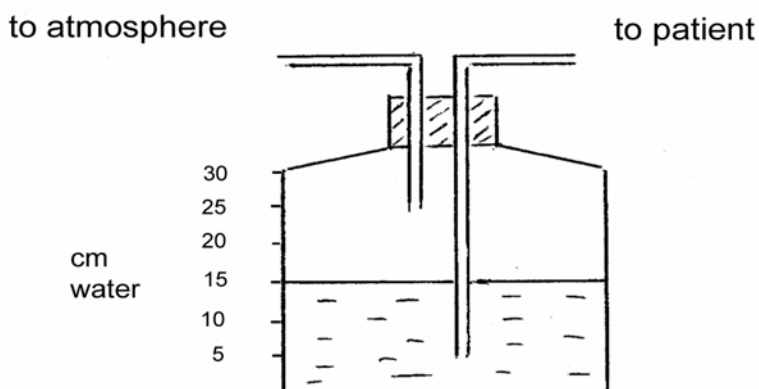
What factors in the history would suggest that he has suffered a significant inhalational injury? (25%)

What symptoms, signs and results of laboratory tests would confirm your suspicions? (75%)

12. An adult patient requires insertion of a chest drain for management of a spontaneous pneumothorax. The patient is not in acute distress.

Describe your technique for insertion of a chest drain in this patient. (50%)

The diagram shows an underwater seal device. Comment on its suitability for connection to the drain you have inserted. (50%)



## FINAL FRCA

### THE ROYAL COLLEGE OF ANAESTHETISTS DIPLOMA OF FELLOW OF THE ROYAL COLLEGE OF ANAESTHETISTS

#### FINAL EXAMINATION

26th October 2004  
9:30am to 12:30pm

Candidates are required to answer all twelve questions. Questions numbered 1 - 3 must be answered in Book A (Blue), 4 - 6 in Book B (Pink), 7 - 9 in Book C (Green) and 10 - 12 in Book D (Yellow). **Candidates who fail to answer all twelve questions will not pass the Examination.** All 12 questions carry equal marks. In multipart questions, the examiners have indicated the way in which marks are allocated by providing the maximum percentage mark available at the end of the part. Candidates are advised to allocate their time following this guidance. Candidates are informed that an examiner will be present during the time allowed for this paper, for consultation in case any question should not appear clear.

#### SECTION A (Book A - blue)

- Q 1] A patient is mechanically ventilated for acute lung injury in the ICU. Explain what practical steps you would take to turn the patient from the supine to the prone position. (70%)  
List three common acute complications of the prone position. (30%)
- Q 2] A comatose, ventilated patient who has a head injury has an intracranial pressure of 35 mmHg. His CT scan excludes a surgically reversible cause. What immediate steps would you take to assess and treat the patient?
- Q 3] List the radiological investigations that are available to help exclude an unstable cervical spine injury in an unconscious, ventilated adult with multiple severe injuries. (25%)  
What are the limitations of each technique? (75%)

#### SECTION B (Book B - pink)

- Q 4] What are the indications for a popliteal fossa block? (10%)  
List the nerves that are affected and describe their cutaneous innervation. (35%)  
What responses would you get on stimulating these nerves? (25%)  
Briefly describe one technique for performing this block. (30%)
- Q 5] Compare the electrolyte content and osmolality of 0.9% sodium chloride (*Normal Saline*) and compound sodium lactate solution (*Hartmann's*). (40%)  
Why might compound sodium lactate solution be a better crystalloid replacement fluid than 0.9% sodium chloride? (40%)  
Explain the effects of a large infusion of 0.9% sodium chloride on acid base balance and electrolytes. (20%)
- Q 6] An obese 70 year old man underwent an emergency abdominal aortic aneurysm repair yesterday evening. He is known to be a heavy smoker and is a treated hypertensive. He has been cardiovascularly stable overnight and is responding appropriately. Propofol and morphine infusions are stopped with a view to extubation. Agitation, tachycardia (heart rate 130) and hypertension develop (250/90 mmHg).  
List the factors that could be important in precipitating this response. (40%)  
Briefly outline your further management in ICU of these factors. (60%)

### **SECTION C (Book C - green)**

- Q 7] List the classes, with an example of each, of a) anticoagulants (20%) and b) antiplatelet drugs (20%) in current clinical practice.  
How would you minimise the incidence of bleeding and haematoma formation associated with epidural anaesthesia in patients taking each of these drugs? (60%)
- Q 8] A patient on the ICU, who had cardiac surgery completed 3 hours ago, is still intubated.  
What clinical features might suggest the development of acute cardiac tamponade? (55%)  
How might you confirm the diagnosis? (5%)  
Outline your management of acute cardiac tamponade? (40%)
- Q 9] You are asked to anaesthetise an 5 year old child (weight 20 kg) for an emergency appendicectomy. Describe in detail the induction of anaesthesia with special reference to:-  
Fluid management (20%)  
The airway (50%)  
Drug management, including doses (30%)

### **SECTION D (BOOK D - yellow)**

- Q 10] Define primary post partum haemorrhage (10%)  
List the pharmacological agents that may be used post partum to reduce uterine atony and any precautions with their use. (50%)  
Outline the management of a significant primary postpartum haemorrhage. (40%)
- Q 11] What factors contribute to intravenous drug errors in anaesthetic practice? (40%)  
What strategies are available to reduce the incidence of such errors? (60%)
- Q 12] What are the presenting clinical features of infective endocarditis? (40%)  
What are the principles that guide the use of antibiotics as prophylaxis against this condition during surgery? (60%)

**THE ROYAL COLLEGE OF ANAESTHETISTS**

**DIPLOMA OF FELLOW OF THE ROYAL COLLEGE OF ANAESTHETISTS**

**FINAL EXAMINATION**

11th May 2004

9:30am to 12:30pm

*Candidates are required to answer **all twelve** questions. Questions numbered 1 - 3 must be answered in Book **A(Blue)**, Questions numbered 4 - 6 must be answered in Book **B (Pink)**, Questions 7 - 9 in Book **C(Green)** and Question 10 - 12 in Book **D(Yellow)**. **Candidates who fail to answer all twelve questions will not pass the Examination.***

*An Examiners will be present during the time allowed for the paper, for consultation in case any question should not appear clear.*

**SECTION A (Book A - Blue)**

1. Describe two adjoining mid-lumbar vertebrae. Include the joints, their nerve supply and the ligaments.
2. Describe the pre-operative assessment and preparation specific to an adult patient who requires a thoraco-abdominal oesophagectomy? Describe your anaesthetic plan for this operation.
3. What are the indications and contra-indications for the use of an arterial tourniquet? What complications may arise from the use of such a tourniquet?

**SECTION B (Book B - Pink)**

4. Define capnography.  
Draw and label a normal capnograph trace.  
Why is capnography useful during general anaesthesia?  
Give examples of abnormal traces and their causes.
5. What procedures are associated with venous gas embolism?  
How can it be detected?  
What are the effects of a large venous gas embolus? Describe its management.
6. What advice, for and against, would you give a primigravida who is asking if she might eat and drink during her labour?  
Give reasons.

**SECTION C (Book C - Green)**

7. Outline the pharmacology and clinical use of low molecular weight heparins for prophylaxis against deep vein thrombosis.
8. List the causes of perioperative atrial fibrillation.  
What are the dangers of acute onset atrial fibrillation?  
How would you manage acute atrial fibrillation in the postoperative period?
9. What problems are associated with anaesthesia for elective surgery in a patient with dialysis-dependent renal failure?

**SECTION D (Book D - Yellow)**

10. List the indications and contraindications for Transcutaneous Electrical Nerve Stimulation (TENS)?  
What does the patient need to know when using a TENS machine?
11. Outline, with reasons, your peri-operative management of an otherwise healthy 4 year old admitted for tonsillectomy.
12. Define transfusion related acute lung injury (TRALI)?  
Discuss its pathogenesis, presentation, management and outcome.

## FINAL FRCA

### THE ROYAL COLLEGE OF ANAESTHETISTS

#### DIPLOMA OF FELLOW OF THE ROYAL COLLEGE OF ANAESTHETISTS

##### FINAL EXAMINATION

23rd October 2003

9:30am to 12:30pm

*Candidates are required to answer **all twelve** questions. Questions numbered 1 - 6 must be answered in Book **A(Blue)** and Questions numbered 7 - 12 must be answered in Book **B (Pink)**. **Candidates who fail to answer all twelve questions will not pass the Examination.***

*Candidates are informed that one of the Examiners is present during the time allowed for the paper, for consultation in case any question should not appear clear.*

##### **Section A** (Book A Blue)

- 1 Describe the arterial blood supply to the spinal cord. How may it be compromised?
- 2 Describe how and why a vaporiser delivering desflurane is different from one delivering isoflurane.
- 3 You are called to the A and E department to review a 4 year old child who requires intubation. She has a clinical diagnosis of meningococcal sepsis. She has reduced consciousness and a petechial rash. Describe your immediate management.
- 4 What are the potential causes of delayed resumption of spontaneous ventilation after major intra-abdominal surgery with general anaesthesia? Discuss prevention, diagnosis and management.
- 5 What are the functions of cyclo-oxygenase (COX) enzymes? How are the side effects of nonsteroidal anti inflammatory drugs related to inhibition of these enzymes?
- 6 What are the risks and benefits of thoracic epidural anaesthesia/analgesia for coronary artery surgery?

##### **Section B** (Book B Pink)

- 7 List the bedside tests available to predict a difficult intubation. Comment on their usefulness.
- 8 Draw the following diagrams (with values): A spirometer trace showing normal lung volumes, FEV<sub>1</sub>/FVC graphs and flow volume loops. How are these altered by the following diseases: asthma, emphysema, pulmonary fibrosis, chest wall restriction and respiratory muscle disease?
- 9 What are the limitations and risks of intra-arterial pressure monitoring in the critically ill? How may these be minimised?
- 10 What potential problems and risks do you consider when planning the anaesthetic management of the delivery of twins?
- 11 Relate the clinical use of thiopentone and propofol to their pharmacological properties.
12. Outline the pathology of acute coronary syndromes. What pharmacological treatments are available for patients with an acute coronary syndrome?



## FINAL FRCA

### THE ROYAL COLLEGE OF ANAESTHETISTS

#### DIPLOMA OF FELLOW OF THE ROYAL COLLEGE OF ANAESTHETISTS

#### FINAL EXAMINATION

20th May 2003  
9:30am to 12:30pm

*Candidates are required to answer **all twelve** questions. Questions numbered 1 - 6 must be answered in Book **A(Blue)** and Questions numbered 7 - 12 must be answered in Book **B (Pink)**. **Candidates who fail to answer all twelve questions will not pass the Examination.***

*Candidates are informed that one of the Examiners is present during the time allowed for the paper, for consultation in case any question should not appear clear.*

#### **SECTION A** (Book A - Blue)

1. Discuss the principles of the management of a 25 year old patient with Down's syndrome, who requires multiple dental extractions.
2. What is the mode of action of epidural opioids? Discuss the relative merits of epidural fentanyl and morphine.
3. Discuss the risks and benefits associated with intermittent positive pressure ventilation through a laryngeal mask airway.
4. What is evidence-based medicine? How would you apply the process to your clinical practice?
5. A patient presents to the pain clinic with low back pain. List the indicators ('red flags') that would alert you to the possibility of serious pathology? In their absence what is the early management of simple mechanical low back pain?
6. What is ventilator induced lung injury? Explain the relative importance of volutrauma and barotrauma. What is the practical importance of ventilator induced lung injury?

#### **SECTION B** (Book B - Pink)

7. Briefly describe the normal anatomy of the right internal jugular vein (including its important relationships). What anatomical abnormalities of this vein can make cannulation hazardous or impossible? Outline the risks associated with cannulation of this vessel and how they can be minimised.
8. Under what circumstances is myoglobin found in the urine? What are the implications of myoglobinuria and how is it managed?
9. List the patterns of peripheral nerve stimulation that may be used to monitor non-depolarising neuro-muscular blockade during anaesthesia. How is each used in clinical practice?
10. A patient with aortic stenosis presents for non-cardiac surgery. What are the clinical features of aortic stenosis and how would pre-operative investigations influence your peri-operative management?
11. A 4 year old child who has been knocked unconscious by a blow from a cricket bat arrives at a paediatric neurosurgical centre. After initial appropriate management a CT scan shows an extradural haematoma. There are no other injuries. Discuss the subsequent management.
12. How may unintended peri-operative hypothermia harm patients?

**THE ROYAL COLLEGE OF ANAESTHETISTS**

**DIPLOMA OF FELLOW OF THE ROYAL COLLEGE OF ANAESTHETISTS**

**FINAL EXAMINATION**

29th October 2002

9:30am to 12:30pm

*Candidates are required to answer **all twelve** questions. Questions numbered 1 - 6 must be answered in Book **A(Blue)** and Questions numbered 7 - 12 must be answered in Book **B (Pink)**. **Candidates who fail to answer all twelve questions will not pass the Examination.***

*Candidates are informed that one of the Examiners is present during the time allowed for the paper, for consultation in case any question should not appear clear.*

**SECTION A (Book A - Blue)**

1. List the three commonest causes of direct maternal deaths in the United Kingdom. What anatomical and physiological changes of pregnancy affect your ability to resuscitate a woman who has suffered cardiovascular collapse at full term?
2. What is pulmonary surfactant? Discuss its production in the lung, mechanism of action and function. What would be the effect of insufficient pulmonary surfactant?
3. Define contractility. Outline the methods available to the clinician to assess myocardial contractility in the peri-operative period.
4. A 60 year old smoker requires non-laser surgery to the vocal cords. Outline the various anaesthetic techniques available, listing advantages and disadvantages of each.
5. Define pressure. List the methods available for measuring systemic arterial blood pressure. Outline the principles involved in one of the methods listed.
6. Outline the nerve pathways involved in the transmission and perception of a painful stimulus from the foot.

**SECTION B (Book B - Pink)**

7. What are the possible deleterious consequences of cardiopulmonary bypass when used in coronary artery surgery? How may these be reduced?
8. Summarise the peri-operative anaesthetic management of a patient who requires plating of his jaw fractured in a fight?
9. What are the principles of pain relief after surgery in a drug abuser dependent on opioids?
10. What are the indications for a pre-operative chest radiograph.
11. What do you understand by the term critical incident? Following a critical incident what information should be recorded? What sequence of events should ensue?
12. Discuss the causes of muscle weakness in a critically ill patient. How would you investigate them?

**THE ROYAL COLLEGE OF ANAESTHETISTS**

**DIPLOMA OF FELLOW OF THE ROYAL COLLEGE OF ANAESTHETISTS**

**FINAL EXAMINATION**

Tuesday 30th April 2002

9.30am to 12.30pm

**CANDIDATES ARE REQUIRED TO ANSWER ALL TWELVE QUESTIONS:**

Questions numbered **ONE TO SIX** must be answered in Book **A.(Blue)** Questions numbered **SEVEN TO TWELVE** must be answered in Book **B.(Pink)**

**Candidates must attempt all twelve questions or they will fail the examination..**

*Candidates are informed that one of the Examiners is present during the time allowed for the paper, for consultation in case any question should not appear clear. Candidates are advised to spend approximately the same amount of time on each question and ensure that the important issues are included in their answers*

**SECTION A (Book A - Blue)**

1. Draw a diagram of the lumbar plexus. Outline the anatomical basis of a '3 in 1' block. Explain why the block may fail to provide reliable analgesia for hip surgery?
2. Describe the principles involved in pulse oximetry. What are its limitations in clinical practice?
3. What aims and strategies are emphasised in a "Pain Management Programme"?
4. Discuss methods of applying non-invasive ventilation. What are its uses and benefits?
5. What is meta-analysis? Outline the methodology. How are the results usually presented?
6. A 78 year old male heavy smoker is admitted for laparotomy for his rectal cancer. He is treated with bendrofluazide and atenolol for hypertension (160/90mm Hg on admission). What specific actions would you take to improve the chances of a successful outcome.

**SECTION B (Book B - Pink)**

7. Describe the anaesthetic management of a penetrating eye injury in a screaming 5 year old child.
8. Discuss the reasons for and against the use of nitrous oxide in anaesthetic practice.
9. What is disseminated intravascular coagulation. Discuss its management in the critically ill patient.
10. Write a guideline for reducing and treating post-operative nausea and vomiting.
11. Discuss the principles underlying the anaesthetic management of carotid endarterectomy.
12. List the key clinical features, and commonest causative agents of severe anaphylaxis occurring during general anaesthesia. Outline its management.

**THE ROYAL COLLEGE OF ANAESTHETISTS**

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**FINAL EXAMINATION**

Tuesday 30th October 2001

9.30am to 12.30pm

**CANDIDATES ARE REQUIRED TO ANSWER ALL TWELVE QUESTIONS:**

Questions numbered **ONE TO SIX** must be answered in Book **A.(Blue)**

Questions numbered **SEVEN TO TWELVE** must be answered in Book **B.(Pink)**

**Candidates must attempt all twelve questions or they will fail the examination..**

*Candidates are informed that one of the Examiners is present during the time allowed for the paper, for consultation in case any question should not appear clear. Candidates are advised to spend approximately the same amount of time on each question and ensure that the important issues are included in their answers*

**SECTION A (Book A - Blue)**

1. Formulate a guideline for the peroperative administration of blood explaining the reasons for your recommendations.
2. What tests may be done to evaluate the adequacy of pulmonary oxygen transfer? Briefly describe how you would interpret the results.
3. A 70 year old man presents for a total hip replacement. He has no significant past medical history. At the anaesthetic assessment clinic he is noted to have a grade III ejection systolic murmur at the right sternal edge, radiating to his neck. Describe, with reasons, what investigations should be undertaken on this patient and explain how the results would affect your anaesthetic management.
4. Describe the features and management of phantom limb pain.
5. Discuss briefly the complications of placing a jugular central venous line. Where should the tip of a left internal jugular line lie and why ?
6. What are the anaesthetic considerations in a patient with autonomic neuropathy?

**SECTION B (Book B - Pink)**

7. Draw a nephron with its blood supply. Where and how do the following exert their effects: loop diuretics, thiazide diuretics and aldosterone antagonists?
8. A patient who has undergone a heart transplant requires non-cardiac surgery. What problems may this present for the anaesthetist?
9. Discuss the ventilatory management of an adult with ARDS.
10. What nationally based audits in the UK include an examination of anaesthetic practice? Outline the methodology and recommendations of two recent reports.
11. A ten week old male infant weighing 3.5 kg is scheduled for inguinal hernia repair. He was delivered prematurely at thirty-four weeks. List the risk factors and state how these can be minimised.
12. Describe the features of the anaesthetic machine which are intended to prevent the delivery of a hypoxic mixture to the patient.

**THE ROYAL COLLEGE OF ANAESTHETISTS**

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**FINAL EXAMINATION**

Tuesday 15th May 2001

9.30am to 12.30pm

**CANDIDATES ARE REQUIRED TO ANSWER ALL TWELVE QUESTIONS:**

Questions numbered **ONE TO SIX** must be answered in Book **A.(Blue)**

Questions numbered **SEVEN TO TWELVE** must be answered in Book **B.(Pink)**

**Candidates must attempt all twelve questions or they will fail the examination..**

*Candidates are informed that one of the Examiners is present during the time allowed for the paper, for consultation in case any question should not appear clear. Candidates are advised to spend approximately the same amount of time on each question and ensure that the important issues are included in their answers*

**SECTION A (Book A - Blue)**

1. Describe the diagnosis and management of venous thromboembolism.
2. Outline the anaesthetic management of an adult patient who requires surgery for a strangulated inguinal hernia. He suffers from obstructive sleep apnoea.
3. Outline the early management of a one year old child with 25% burns caused by scalding.
4. How would you recognise that a patient has regurgitated during an anaesthetic administered using a laryngeal mask airway? How would you manage the problem?
5. What is an appropriate intervertebral space at which to insert a spinal needle to administer a subarachnoid anaesthetic for a Caesarean section? Give your reasons and describe how you would locate the space.
6. Outline the methods of estimation of arterial pCO<sub>2</sub> and their limitations.

**SECTION B (Book B - Pink)**

7. What are the therapeutic uses of magnesium and how does it work?
8. What are the possible causes of intra-operative myocardial ischaemia in a 65 year old male undergoing major intra-abdominal surgery? Outline how the incidence of these may be minimised.
9. How can ultrasound be useful in anaesthesia and intensive care medicine?
10. When obtaining consent for an epidural for a primigravida in labour, what complications do you mention? Quote their incidence if known. What can be done to reduce the likelihood of these problems?
11. Describe the criteria and tests for brain stem death. Briefly indicate the neurological basis for each test.
12. How would you provide optimal pain relief for a 60 year old man undergoing shoulder replacement?

**THE ROYAL COLLEGE OF ANAESTHETISTS**

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**FINAL EXAMINATION**

31st October 2000

9.30am to 12.30pm

**CANDIDATES ARE REQUIRED TO ANSWER ALL TWELVE QUESTIONS:**

Questions numbered **ONE TO SIX** must be answered in Book A.

Questions numbered **SEVEN TO TWELVE** must be answered in Book B.

**Candidates must attempt all twelve questions or they will fail the examination..**

*Candidates are informed that one of the Examiners is present during the time allowed for the paper, for consultation in case any question should not appear clear. Candidates are advised to spend approximately the same amount of time on each question and ensure that the important issues are included in their answers*

**SECTION A (Book A)**

1. Outline the key points in the management of a patient with massive haemorrhage.
2. What diagnostic features would lead you to identify malignant hyperthermia during and immediately after anaesthesia of an adolescent presenting for appendicectomy.
3. Write brief notes on the physiological responses that constitute the stress response to surgery.
4. How does a rotameter flowmeter work? Describe its advantages and limitations.
5. What safety features should be incorporated into an intravenous patient controlled analgesia (PCA) system and what is the purpose of each? What instructions would you give to the nursing staff, having set up the PCA?
6. A ten week old male infant weighing 3.5 kg is scheduled for inguinal hernia repair. He was delivered prematurely at thirty-four weeks. List the risk factors and state how these can be minimised.

**SECTION B (Book B)**

7. You anaesthetised a sixty-four year old man for removal of a protruding cervical disc C4/5. The patient was found to be quadriplegic in recovery. Discuss the likelihood of this being a consequence of your anaesthetic.
8. Discuss the perioperative management of the blood pressure of a patient undergoing removal of a pheochromocytoma.
9. What are the main points that you would include in a patient information leaflet that you would submit to support an application to your local ethics committee to study a new non-depolarising muscle relaxant?
10. Describe the diagnosis and immediate assessment of a patient with smoke inhalation injury.
11. Describe the anatomy of the nerves involved for neural conduction blockade at the ankle.
12. A sixty-five year old diabetic female is to undergo a total abdominal hysterectomy. She is normally controlled by oral hypoglycaemic drugs. Describe your perioperative management of her blood sugar.

**THE ROYAL COLLEGE OF ANAESTHETISTS**

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**FINAL EXAMINATION**

18th May 2000  
9.30am to 12.30pm

**CANDIDATES ARE REQUIRED TO ANSWER ALL TWELVE QUESTIONS:**

Questions numbered **ONE TO SIX** must be answered in *Book A*.

Questions numbered **SEVEN TO TWELVE** must be answered in *Book B*.

**Candidates must attempt all twelve questions or they will fail the examination..**

*Candidates are informed that one of the Examiners is present during the time allowed for the paper, for consultation in case any question should not appear clear. Candidates are advised to spend approximately the same amount of time on each question and ensure that the important issues are included in their answers*

**SECTION A (Book A)**

1. A 70 year old man with chronic obstructive airways disease requires a transurethral resection of the prostate. Outline the advantages and disadvantages of intrathecal block for this patient.
2. What are the problems of monitoring anaesthetised patients in the magnetic resonance imaging unit?
3. What is the differential diagnosis of persistent headache in the puerperium of a woman who has undergone a regional anaesthetic technique? Describe the distinguishing clinical features of each cause.
4. How can jugular venous bulb oxygen saturation be measured? What factors cause its value to increase or decrease?
5. How may coagulation be assessed in the perioperative period?
6. Describe the anatomy of the coeliac plexus. What are the indications for its therapeutic blockade?

**SECTION B (Book B)**

7. What are the advantages and disadvantages of day case anaesthesia in patients aged more than 80 years?
8. What is the role of the laryngeal mask airway in the management of difficult intubation?
9. A patient who is HIV sero-positive is scheduled to undergo a laparotomy. Discuss the factors determining the risk of transmission to theatre staff. How can this risk be reduced?
10. Describe your procedure for cardiac life support of a child aged 5 years.
11. Outline your management of a patient with status asthmaticus who is brought into the A&E Department.
12. List, with a brief statement on the effectiveness of each one, the methods described for detecting awareness during anaesthesia.

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**FINAL EXAMINATION**

2nd November 1999

9.30am to 12.30pm

**CANDIDATES ARE REQUIRED TO ANSWER ALL TWELVE QUESTIONS:**

Questions numbered **ONE TO SIX** must be answered in *Book A*.

Questions numbered **SEVEN TO TWELVE** must be answered in *Book B*.

**Candidates must attempt all twelve questions or they will fail the examination..**

*Candidates are informed that one of the Examiners is present during the time allowed for the paper, for consultation in case any question should not appear clear. Candidates are advised to spend approximately the same amount of time on each question and ensure that the important issues are included in their answers*

**SECTION A (Book A)**

1. A 70 year old man is to undergo an above knee amputation. What can be done to relieve any pain he may experience thereafter?
2. A 27 year old man is admitted with a fracture of the cervical spine at C5/6. There are no other injuries. Describe the management of this patient in the first 48 hours after injury.
3. What is the anaesthetic management of pyloric stenosis in a 6 week old child?
4. What are the risks of carotid endarterectomy? How may the anaesthetist reduce these risks?
5. You are asked to investigate the effectiveness of a new anti-emetic agent. Briefly outline the principles which should guide the design of such a study
6. What would make you suspect that a patient had sustained an air embolus during an anaesthetic? How should this situation be managed?

**SECTION B (Book B)**

7. What factors contribute to postoperative cognitive deficits in elderly surgical patients? How may these risks be minimised?
8. What factors determine the rate of haemoglobin desaturation during a failed intubation? What can be done to maintain oxygenation in this situation?
9. List the predisposing factors for aspiration of gastric contents during general anaesthesia. How can the risk of this complication be minimised? How should it be treated?
10. What are the advantages of retaining motor power in a woman having an epidural for a normal labour? How can this be achieved and what would you check before allowing the woman to get out of bed?
11. Classify the types of heart block. Outline appropriate treatment in the intraoperative period.
12. How would you manage the transfer of a patient to a regional neurosurgical unit for evacuation of an extradural haematoma?



**THE ROYAL COLLEGE OF ANAESTHETISTS**

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**FINAL EXAMINATION**

18th May 1999  
9.30am to 12.30pm

**CANDIDATES ARE REQUIRED TO ANSWER ALL TWELVE QUESTIONS:**

Questions numbered **ONE TO SIX** must be answered in Book A.

Questions numbered **SEVEN TO TWELVE** must be answered in Book B.

**Candidates must attempt all twelve questions or they will fail the examination..**

*Candidates are informed that one of the Examiners is present during the time allowed for the paper, for consultation in case any question should not appear clear. Candidates are advised to spend approximately the same amount of time on each question and ensure that the important issues are included in their answers*

**SECTION A (Book A)**

1. Outline your perioperative management of a patient with a ruptured abdominal aortic aneurysm.
2. What are the physical principles of the capnograph? Discuss the applications of capnography in anaesthetic practice.
3. A General Practitioner has contacted you for advice about a patient who may be susceptible to malignant hyperthermia. Write a letter to the General Practitioner explaining the significance of this condition for the patient and the relatives.
4. Outline the possible complications of anaesthesia with a patient in the prone position.
5. What is the normal glucocorticoid response to surgery? Outline, with reasons, your perioperative corticosteroid regimens in patients:
  - a) taking steroids at the time of surgery;
  - b) who have stopped taking steroids several months previously.
6. How do you confirm that a double-lumen endobronchial tube has been placed correctly? Outline the possible complications associated with the use of this equipment.

**SECTION B (Book B)**

7. What are the principles of cancer pain management?
8. Outline your technique for percutaneous tracheostomy with particular reference to the anatomy involved. List the possible complications of this procedure.
9. A surgeon is attempting an inguinal herniorrhaphy in a fit obese young man under local anaesthetic infiltration that is proving inadequate and asks for your help. What anaesthetic strategies are available for managing this situation?
10. What are the principles of adult cardio-pulmonary bypass? What are the common complications of this procedure?
11. What are the risks for patients associated with the administration of general anaesthesia in the dental surgery? How may these risks be reduced?
12. Write short notes, with reasons, on your anaesthetic management of emergency Caesarean section for cord-prolapse in a fit 21 year old primagravida.

**THE ROYAL COLLEGE OF ANAESTHETISTS**

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**FINAL EXAMINATION**

3rd November 1998

9.30am to 12.30pm

*Candidates are required to answer **all twelve** questions. Questions numbered 1 - 6 must be answered in Book **A** and questions numbered 7 - 12 must be answered in Book **B**.*

***Candidates who fail to answer all twelve questions will not pass the Examination.***

*Candidates are informed that one of the Examiners is present during the time allowed for the paper, for consultation in case any question should not appear clear.*

**SECTION A (Book A)**

1. List, with reasons, the factors which affect the incidence of perioperative myocardial infarction.
2. An adult patient is known to be severely difficult to intubate. Describe a technique of fiberoptic intubation for this case.
3. Outline the methods for prophylaxis of venous thromboembolism in routine surgical practice.
4. What are the factors contributing to unplanned awareness during general anaesthesia?
5. What information would you wish to obtain from a patient at your postanaesthetic visit, the day after a total hip replacement?
6. What solutions are available for the restoration of circulating volume in a patient suffering from acute blood loss? Discuss the advantages and disadvantages of each.

**SECTION B (Book B)**

7. Outline the clinical features and management of bupivacaine toxicity.
8. Draw a labelled diagram of the anatomical relations of the stellate ganglion. How is it blocked and what are the possible complications?
9. How would you determine the mixed venous oxygen content in the intensive care patient? What is the usefulness of this measurement?
10. A 20 year old patient, with sickle cell disease, was injured 12 hours ago. He has fractures of the metacarpal bones on his dominant hand. Elective surgical reduction and fixation is planned. Describe your anaesthetic management.
11. What safety features should be incorporated into a patient controlled analgesia (PCA) system and what is the purpose of each? What instructions would you give to the nursing staff, having set up the PCA?
12. Outline the anaesthetic management of a 2 yr old child who is scheduled for therapeutic bronchoscopy following inhalation of a foreign body 2 days ago. The child does not exhibit any signs of upper airway obstruction.

**THE ROYAL COLLEGE OF ANAESTHETISTS**

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**FINAL EXAMINATION**

19th May 1998  
9.30am to 12.30pm

*Candidates are required to answer **all twelve** questions. Questions numbered 1 - 6 must be answered in Book A and questions numbered 7 - 12 must be answered in Book B. **Candidates who fail to answer all twelve questions will not pass the Examination.***

*Candidates are informed that one of the Examiners is present during the time allowed for the paper, for consultation in case any question should not appear clear.*

**SECTION A (Book A)**

1. Describe your procedure for cardiac life support in a child aged five years.
2. What methods are available for therapeutic nerve blockade? Explain the mechanism of action for each method.
3. You are asked to anaesthetise an 87 year old lady for diathermy of her bladder tumour on a day case basis. What are the potential problems of this case and how would you manage them?
4. What are the disadvantages of nitrous oxide in clinical practice?
5. How does a rotameter flowmeter work? Describe its advantages and limitations.
6. Describe in detail how you would accurately measure a patient's peak expiratory flow rate. What factors may give rise to erroneous readings?

**SECTION B (Book B)**

7. Draw a labelled diagram of the anatomy of the anterior aspect of the wrist. How may this knowledge be used in anaesthetic practice?
8. List the factors associated with central venous catheter infections and suggest methods to limit such infections.
9. A patient with a history of obstructive sleep apnoea presents for an elective cholecystectomy. How would you assess the fitness for anaesthesia? What precautions would you take with your anaesthetic management of this patient?
10. A 60 year old man presents for a hemicolectomy. How may choice of pain management influence recovery from surgery?
11. Explain the importance of a high airway pressure alarm system during general anaesthesia.
12. List the pathophysiological and clinical features of HELLP syndrome. What are the diagnostic laboratory findings and the priorities in management?

## FINAL FRCA

### THE ROYAL COLLEGE OF ANAESTHETISTS

#### DIPLOMA OF FELLOW OF THE ROYAL COLLEGE OF ANAESTHETISTS

#### FINAL EXAMINATION

4th November 1997

9.30am to 12.30pm

*Candidates are required to answer **all twelve** questions. Questions numbered 1 - 6 must be answered in Book A and questions numbered 7 - 12 must be answered in Book B. **Candidates who fail to answer all twelve questions will not pass the Examination.***

*Candidates are informed that one of the Examiners is present during the time allowed for the paper, for consultation in case any question should not appear clear.*

#### SECTION A (Book A)

1. A 70 yr old man with chronic obstructive airways disease requires a transurethral resection of the prostate. Outline the advantages and disadvantages of intrathecal block for this patient.
2. What immunological consequences may result from homologous blood transfusion?
3. Outline the effects of old age upon morbidity and mortality in anaesthesia.
4. What hazards does a patient encounter as a result of being placed in the lithotomy position for surgery? What additional hazards are introduced by then tilting the operating table head-down? Indicate briefly how you attempt to prevent these hazards.
5. A patient on the intensive care unit has a mean arterial pressure of 130 mmHg. What drugs might be useful for reducing this to a safe level and what is the mechanism of action of each?
6. The plasma concentrations of a drug have been measured in 20 normal patients and in 20 patients with renal failure. What simple statistical tests exist to determine whether these 2 sets of observations differ at the 5% level? What assumptions are inherent in each test which you describe?

#### SECTION B (Book B)

7. What are the pathophysiological insults which exacerbate the primary brain injury following head trauma? How can these effects be prevented or reduced?
8. What are the postoperative problems in the first 24 hrs after coronary artery bypass graft? How are they prevented?
9. List, (with examples) the causes of neurogenic pain. What symptoms are produced? What treatments are available?
10. Make a simple diagram, labelled to show the anatomical structures associated with the right internal jugular vein. List the complications of cannulation of this vessel, mentioning how each may be avoided.
11. Outline the possible reasons for the reduction, over the last decade, of maternal mortality associated with anaesthesia.
12. List the risk factors for venous thromboembolism and classify the current methods of prevention, with examples.

**THE ROYAL COLLEGE OF ANAESTHETISTS**

**DIPLOMA OF FELLOW OF THE ROYAL COLLEGE OF ANAESTHETISTS**

**FINAL EXAMINATION**

20th May 1997  
9:30am to 12:30pm

*Candidates are required to answer **all twelve** questions. Questions numbered 1 - 6 must be answered in Book A and Questions numbered 7 - 12 must be answered in Book B. **Candidates who fail to answer all twelve questions will not pass the Examination.***

*Candidates are informed that one of the Examiners is present during the time allowed for the paper, for consultation in case any question should not appear clear.*

**SECTION A (Book A)**

1. List the dangers to the eye of general anaesthesia for elective intraocular operations. How are these prevented?
2. What are the choices for post-operative analgesia for a child aged 4 years presenting for repair of an inguinal hernia as a day case? State briefly the advantages and disadvantages of each method.
3. The first patient on your operating theatre list tomorrow morning has an implanted (permanent) cardiac pacemaker. List, with reasons, the relevant factors in your preoperative assessment.
4. What are the types of anaesthetic that should be considered for fixation of a compound ankle fracture in a patient who was briefly knocked unconscious at the accident? Outline the advantages and disadvantages of each technique.
5. An 80 year old lady with a sub-capital fractured neck of femur requires surgical fixation. She is found to be in fast atrial fibrillation. What are the important points in the preoperative preparation for anaesthesia in this case?
6. Outline the problems involved in anaesthetising an intravenous heroin abuser needing urgent surgery for incision of perianal abscess.

**SECTION B (Book B)**

7. You have been asked to anaesthetise a 60 year old woman for ligation and stripping of varicose veins in one leg. She has a history of ischaemic heart disease. Explain briefly how suitability for her management in a day-case facility is assessed.
8. A 62 year old man is admitted to the high dependency unit following a laparotomy to relieve a large bowel obstruction. He has a urinary catheter in situ. Two hours later, he has only passed 25ml of urine. List, with reasons, the likely causes. What is going to be your initial plan of management?
9. What measurements and derived values can be made from pulmonary artery catheters used in the intensive care unit? Suggest a clinical application for each one.
10. What are the indications for performing a tracheostomy? List the complications of tracheostomy.
11. What are the problems of monitoring anaesthetised patients in the magnetic resonance imaging unit?
12. Outline your management of a fit primagravida who suffers inadvertent dural puncture with a 16 gauge Tuohy needle during attempted epidural for pain relief in the first stage of labour (cervix 4cm dilated).

**THE ROYAL COLLEGE OF ANAESTHETISTS**

**DIPLOMA OF FELLOW OF THE ROYAL COLLEGE OF ANAESTHETISTS**

**FINAL EXAMINATION**

5th November 1996

9:30am to 12:30pm

*Candidates are required to answer **all twelve** questions. Questions numbered 1 - 6 must be answered in Book **A** and Questions numbered 7 - 12 must be answered in Book **B**. **Candidates who fail to answer all twelve questions will not pass the Examination.***

*Candidates are informed that one of the Examiners is present during the time allowed for the paper, for consultation in case any question should not appear clear.*

**SECTION A (Book A)**

1. How would you manage a case of accidental intra-arterial injection of thiopentone in the upper limb?
2. Summarise the causes, effects, and prevention of aspiration pneumonitis.
3. List the likely causes of collapse in the dental chair of a patient undergoing a procedure under local anaesthetic without sedation, with notes on the presenting signs and symptoms. Briefly state what first-aid measures can be undertaken in each case.
4. What particular problems may occur during lower abdominal surgery in a patient who suffered a traumatic transection of the spinal cord at C6 four weeks previously? Briefly indicate how you would avoid or prevent the problems you describe.
5. Describe how you would carry out an axillary brachial plexus block
6. What is your choice of anaesthesia for pericardectomy in constrictive pericarditis? Give reasons for your choice.

**SECTION B (Book B)**

7. A 40-year old man is admitted with an acute head injury. List the indications for intubation, ventilation and referral to a neurosurgical unit.
8. Make a simple drawing, with labels, to show the trachea, main and segmental bronchi.
9. Outline your management of an adult patient brought into the A & E department in status asthmaticus.
10. List, with a brief statement on the effectiveness of each one, the means available for detecting awareness during anaesthesia.
11. What are the advantages and disadvantages of intravenous patient controlled analgesia for post-operative pain control?
12. A 60-year old man is referred to you with reflex sympathetic dystrophy following an injury at the elbow 6 months earlier. Outline the treatment.