

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

Tuesday 21st October 2008

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+.

Questions are printed in the appropriate coloured book:

1 & 2 in Book A (Blue)

3 & 4 in Book B (Pink)

5 & 6 in Book C (Green)

7 & 8 in Book D (Yellow)

9 & 10 in Book E (Orange)

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

be marked. 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

What are the important organisational (40%) and clinical (50%) considerations that govern the anaesthetic

management of patients with morbid obesity?

Question 2

a) Describe the surface anatomical landmarks for (i) the anterior (Beck's) and (ii) one posterior approach to

sciatic nerve block. (50%)

b) What practical advantages and disadvantages would you consider when choosing between these two

approaches in an individual patient? (20%)

c) 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 mediumsize

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.

a) Describe your understanding of the cardiac pathophysiology of ASD. (20%)

b) What are your considerations specific to the cardiac condition in this patient?

i) Preoperatively (20%)

ii) General anaesthetic principles focused on the cardiac condition (30%)

c) Immediately following delivery by caesarean section under general anaesthesia, the SpO₂ 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

(a) What complications may arise from cannulation of the subclavian vein? (45%)

(b) 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%).

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%)

FINAL FRCA

Please turn over

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

Tuesday 22nd April 2008

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+.

Questions are printed in the appropriate coloured book:

1 & 2 in Book A (Blue) 3 & 4 in Book B (Pink) 5 & 6 in Book C (Green)

7 & 8 in Book D (Yellow) 9 & 10 in Book E (Orange) 11 & 12 in Book F (White)

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wrong book will not be marked. 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

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

Question 2

- 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%)
- What are the principle causes of direct maternal death in the United Kingdom? (25%)
- 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

- Describe the factors that may lead to i) venous air embolism (20%) and ii) arterial air embolism. (20%)
- What is paradoxical air embolism and how does it occur? (20%)
- 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.

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

C (Green book)

Question 5

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

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Question 6

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

D (Yellow book)

Question 7

- If neuromuscular block has been achieved during general anaesthesia using rocuronium explain the mechanism of spontaneous recovery from neuromuscular blockade. (15%)
- What classes of drugs could be used to accelerate the recovery from rocuronium? (10%)
- 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%)

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

Tuesday 23rd October 2007

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

Question 2

- a) List the specific problems and risks associated with a twin pregnancy. (45%)
- b) 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.

- 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%)

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.

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

Please turn over

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C (Green book)

Question 5

- a) What clinical features would suggest to you that a patient has a pleural fluid collection? (45%)
- b) 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

- a) What are the clinical features of acquired myasthenia gravis? (25%)
- b) What tests are available to confirm the diagnosis? (15%)
- c) 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

- a) What are the important safety features incorporated into the design of a medical gas cylinder and

valve? (45%)

b) How would you normally identify the content of a gas cylinder? (25%)

c) 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

a) List patient-related risk factors that make a patient susceptible to venous thrombo-embolism. (Do not

list surgery-related risk factors.) (30%)

b) 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%)

c) 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.

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 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.

a) What assessments and investigations might be used to support this diagnosis and help grade the severity? (30%)

b) Outline your treatment plan for the first 48 hours. (50%)

c) What is the expected mortality and the main cause of death in severe acute pancreatitis? (10%)

F (White book)

Question 11

a) What are the important considerations in the preoperative assessment of a hypertensive patient presenting for elective surgery? (50%)

b) Outline the perioperative risks associated with hypertension and their management. (40%)

Question 12

a) List the principal causes of delayed recovery of consciousness after anaesthesia. (40%)

b) 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**

8th May 2007

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. Questions are printed in the appropriate coloured book:

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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

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

Question 6

- How are implantable cardiac pacemakers and implantable cardioverter defibrillators classified? (25%)
- What information should be sought relating to these devices preoperatively? (30%)
- 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

- 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**

24th 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.

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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

Final FRCA Short Answer Questions Paper – October 2006

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%)

**FINAL FRCA
THE ROYAL COLLEGE OF ANAESTHETISTS
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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

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

Question 2

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

Question 3

- What are the adverse effects of abdominal laparoscopy? (75%)
- 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 2nd 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.

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

Please turn over

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_aCO₂? (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 H₂O CPAP. The percutaneous

tracheostomy was performed 18 hours ago without complication.

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

Question 8

- a) Briefly describe your technique for performing a deep cervical plexus block for carotid endarterectomy under local anaesthesia. (35%)
- b) List the complications of a deep cervical plexus block. (35%)
- c) 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⁻². 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

- 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? (30%)

Question 11

- a) What methods are used to measure blood pressure non-invasively? (35%)
- b) How do most automated non-invasive cuff techniques measure blood pressure? (45%)
- c) 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.

- a) Outline your preoperative assessment of this patient. (55%)
- b) 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, PaCO₂ 2.9 kPa, HCO₃ 4.7 mmol/l, BE -26.6 mmol/l and PaO₂ 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.