



ROYAL AUSTRALASIAN COLLEGE OF SURGEONS

Fellowship Examination 2014

# Neurosurgery

## Written Paper One

Wednesday 16 April 2014

Reading Time: 10 minutes

Writing Time: 2 hours

### QUESTION BOOK

<i>Section</i>	<i>Number of Questions to be Answered</i>
Essay Questions	3

**Candidates are permitted to bring into the examination room:**

- Pens
- Pencils
- Erasers

**Candidates are not permitted to bring into the examination room:**

- Blank sheets of paper
- White-out liquid/tape

**Materials supplied:**

- Question Book of 3 pages
- Answer Book

**Instructions to candidates:**

- Write your candidate number on the front of each Answer Book.
- Write your response in the Answer Book provided.
- All answers must be written in English.

At the end of the examination, candidates are to leave the Question Book and Answer Book on their desk. Candidates are not permitted to remove the Question Book from the examination room.

**Candidates are NOT permitted to bring mobile phones and/or any other unauthorised devices into the examination room.**

## Essay Questions

Write your response in the answer book provided.

Clearly number the question you are answering.

### Question 1

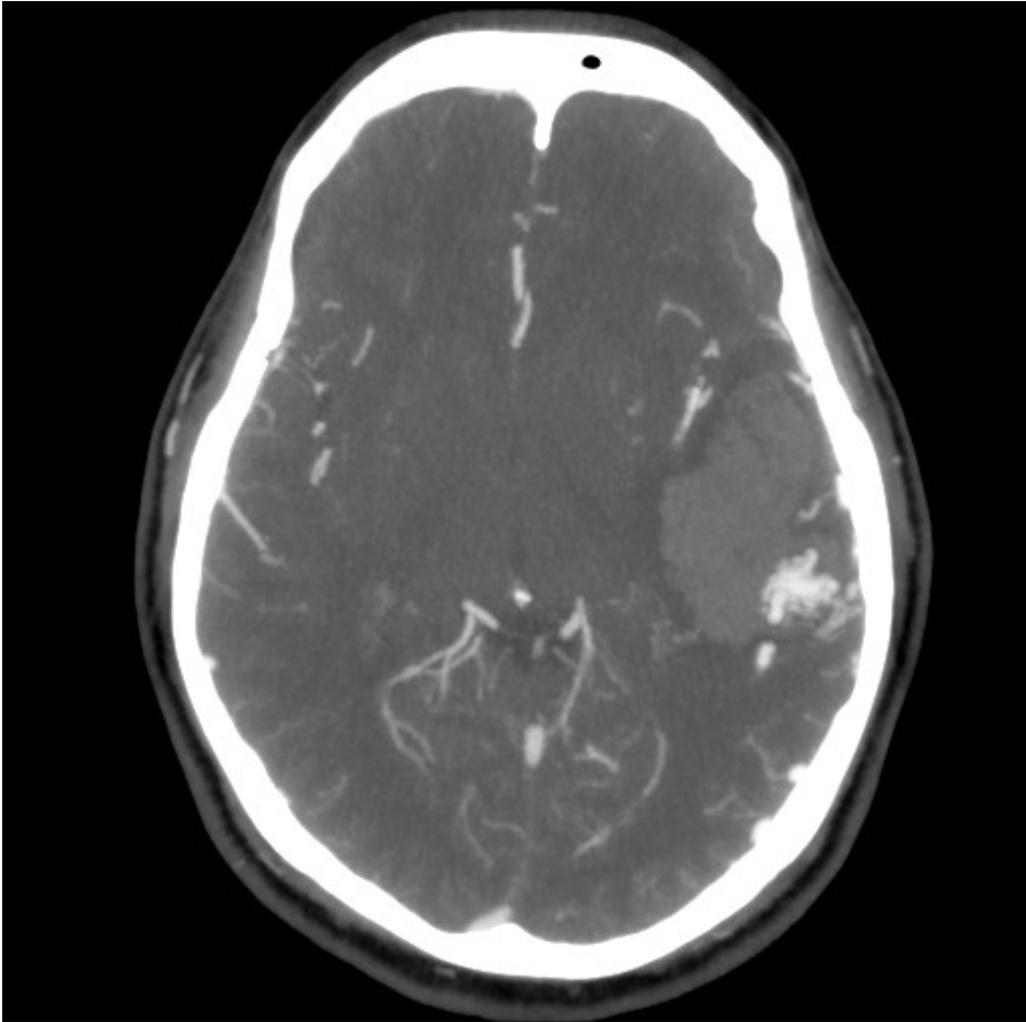
A healthy 36 year-old man crashed whilst cycling. On arrival at your institution he had severe neck pain and paraesthesia in both upper limbs. He had no objective neurological abnormality on examination. A mid-sagittal T2-weighted MRI and mid-sagittal and right-sagittal CT scan are shown.



1. Describe methods to reduce this fracture dislocation. Include the advantages and disadvantages of each of these methods (include in your answer the role of traction).
2. Explain how you would perform your choice of definitive surgical management of this fracture dislocation.

## **Question 2**

A previously fit and well 45 year old man presents to your hospital. His partner reports that he had a sudden onset of severe headache earlier that day. On examination he has a mild speech disorder and a mild right hemiparesis and his GCS score is 15. A CTA scan is shown.



1. Describe the radiological features and the diagnosis.
2. How would you manage this patient and explain the reasons for your management?

## **Question 3**

Describe the key anatomical features of the vertebral column at C5-6 including articulations and the mechanisms of spinal stability. Also describe the contents of the spinal canal and neural foramina and the internal structure of the cord (identifying the location of clinically relevant tracts and their functions). Describe important vascular structures within the vertebral column as well as the circulation of the spinal cord at C5-6. Include one or more diagrams to illustrate your answer.



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Fellowship Examination 2014

# Neurosurgery

## Written Paper Two

Wednesday 16 April 2014

Reading Time: 10 minutes

Writing Time: 2 hours

### QUESTION BOOK

<i>Section</i>	<i>Number of Questions to be Answered</i>
One - Essay Questions	2
Two - Short Answer Question	1

**Candidates are permitted to bring into the examination room:**

- Pens
- Pencils
- Erasers

**Candidates are not permitted to bring into the examination room:**

- Blank sheets of paper
- White-out liquid/tape

**Materials supplied:**

- Question Book of 5 pages
- Answer Book

**Instructions to candidates:**

- Write your candidate number on the front of each Answer Book.
- Write your response in the Answer Book provided.
- All answers must be written in English.

At the end of the examination, candidates are to leave the Question Book and Answer Book on their desk. Candidates are not permitted to remove the Question Book from the examination room.

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Candidate Number:

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## Section One: Essay Questions

Write your response in the answer book provided.

Clearly number the question you are answering.

### Question 1

A 25 year-old man presents with a one month history of unsteady gait and clumsiness. The MRI scan shows a lesion with an enhancing mural nodule.



1. List the likely differential diagnoses
2. Describe in detail a genetic condition that may be associated with this lesion
3. Explain investigations that may be required to confirm the diagnosis of that genetic condition and your plan for surveillance of a patient with this condition

## Question 2

A 48 year-old male construction-worker with a past history of mechanical low back pain has presented with a 4 week history of worsening pain. He is now reporting “spasms” of back pain not responsive to oral narcotic analgesics.

He is tachycardic, normotensive, and afebrile. When examined he has marked limitation of lumbar movements but is neurologically normal. Full blood count, electrolytes, renal function and liver function tests are normal. Plain lumbar X-ray is unremarkable. His MRI is shown.



1. What is the diagnosis? Describe the features of this MRI that support your diagnosis and exclude other pathologies.
2. Detail your comprehensive short and long-term management, including investigations and the treatment options.

## **Section Two - Short Answer Questions**

**Write your response in the answer book provided.**

**Clearly number the question you are answering.**

### **Question 3**

Write short notes on the following:

1. Present an organised list of the non-traumatic causes of coma.
2. Define the following terms: delirium, dementia, coma and vegetative state.
3. Describe the steps required to appropriately perform the initial clinical evaluation of the comatose patient.
4. How do you clinically differentiate central and lateral transtentorial herniation? Explain the anatomical basis for this difference?
5. Draw the anatomical pathway for the pupillary light reflex.
6. Describe pupil size and symmetry and reflex response for: metabolic coma; a diencephalic lesion; a tectal lesion; uncal herniation; and a midbrain lesion.
7. Describe the pattern of breathing and the hypothesised level of injury in coma for: Cheyne-Stokes respiration; central neurogenic hyperventilation; and apneustic breathing?
8. Describe upper limb flexor and extensor motor responses to painful stimulus. What is the neuroanatomical correlate (level of injury) for these responses?