

**OXFORD CAMBRIDGE AND RSA EXAMINATIONS**

**Advanced GCE**

**BIOLOGY**

**2805/05**

**Mammalian Physiology and Behaviour**

Thursday **29 JANUARY 2004** Afternoon 1 hour 30 minutes

Candidates answer on the question paper.

Additional materials:

Electronic calculator

Ruler (cm/mm)

Candidate Name	Centre Number	Candidate Number										
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**TIME** 1 hour 30 minutes

**INSTRUCTIONS TO CANDIDATES**

- Write your name in the space above.
- Write your Centre number and Candidate number in the boxes above.
- Answer **all** the questions.
- Write your answers, in blue or black ink, in the spaces provided on the question paper.
- Read each question carefully before starting your answer.

**INFORMATION FOR CANDIDATES**

- The number of marks is given in brackets [ ] at the end of each question or part question.
- You will be awarded marks for the quality of written communication where this is indicated in the question.
- You may use an electronic calculator.
- You are advised to show all the steps in any calculations.

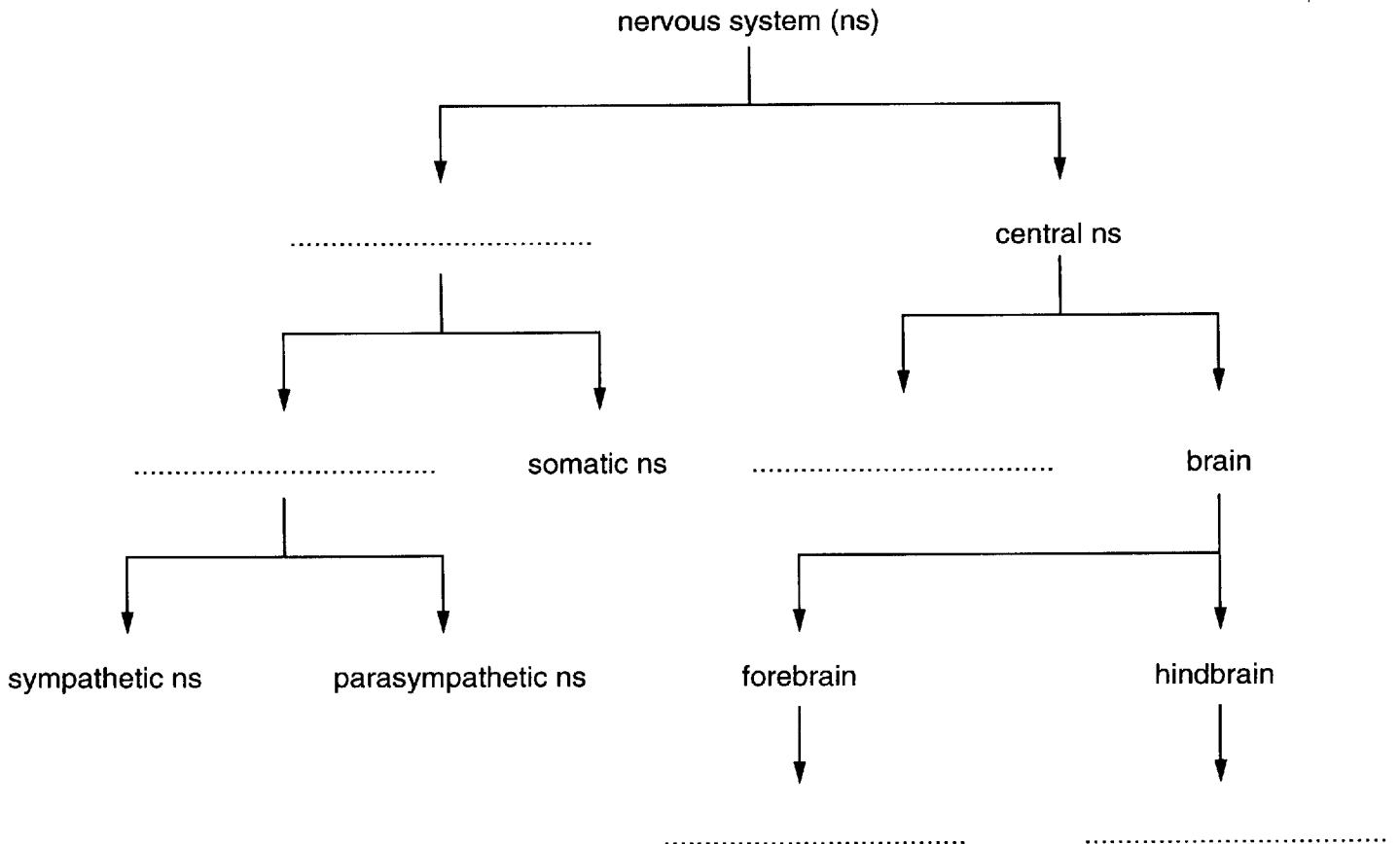
FOR EXAMINER'S USE		
Qu	Max.	Mark
1	12	
2	17	
3	14	
4	19	
5	13	
6	15	
<b>TOTAL</b>	<b>90</b>	

**This question paper consists of 21 printed pages, 3 blank pages and an insert.**

Answer **all** the questions.

- 1 (a) Fig. 1.1 shows the major components of the mammalian nervous system. Complete Fig. 1.1 using the terms from the list below.

- autonomic nervous system
- cerebellum
- spinal cord
- cerebrum
- peripheral nervous system



**Fig. 1.1**

[5]

- (b) The brain consists of white matter, containing myelinated neurones, and grey matter, containing unmyelinated neurones.

Explain the advantage of a neurone being myelinated.

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[2]

(c) Cerebrospinal fluid (CSF) is formed by filtration of the blood. It bathes brain tissues, removing metabolites and excess heat, before returning into the bloodstream. CSF is similar to blood but contains no blood cells or plasma proteins. The main component of CSF is water.

(i) Explain how CSF is able to remove excess heat from the brain.

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.....  
.....[2]

(ii) Explain, using the term **water potential**, how CSF is returned into the bloodstream.

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.....  
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.....  
.....[3]

[Total: 12]

2 Read the following passage about liver transplants.

The most common reason for a liver transplant in young children is a blockage of the bile duct. This leads to a build up of bile in the liver that cannot enter the duodenum. Liver cells become damaged by bile. Children with this condition suffer from jaundice and weight loss. Liver transplants in adults are usually required because of cirrhosis of the liver.

During transplant surgery, the diseased liver is removed leaving portions of its major blood vessels in place. The new liver is then inserted and attached to these blood vessels. The liver is also connected to the patient's bile duct by means of a 'T-tube'. One section of this T-tube passes to the outside of the patient's body where it is temporarily closed off.

The first successful liver transplant was performed in 1967, but until the discovery of new anti-rejection drugs in the 1980s only a small number of these transplants were performed and many were unsuccessful. These drugs prevent destruction of the transplanted liver by the patient's immune system. Use of these drugs has increased the number of successful transplants.

(a) Name **two** of the major blood vessels which are attached to the transplanted liver.

1 .....

2 .....[1]

(b) Suggest **one** use of the T-tube following a liver transplant.

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.....  
.....[1]

(c) Outline how the patient's immune system might destroy the transplanted liver if anti-rejection drugs were not given to the patient.

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.....[3]





