

PRIMARY EXAMINATION

PHYSIOLOGY

Thursday 7 December 2000

Time allowed: Two hours

INSTRUCTIONS TO CANDIDATES

Answer three (3) of the following (6) questions. (If you answer more than three questions, only the first three answers will be marked).

Each question is of equal value, namely, 33.3% of the total for the written paper.

Ample time is allowed for your answers, so please try to present your answers in a well – organized manner. Diagrams may be used to illustrate your answers.

Allow time at the end of the examination to read your answers carefully.

Question 1

(40 minutes: 33 marks)

A large series of patients who are to have their mandibular wisdom teeth extracted under general anaesthetic are divided into three groups, and the members of each group have their teeth extracted under different conditions as follows:

Group 1 – General anaesthetic with mandibular block administered before the surgery begins.

Group 2 – General anaesthetic with mandibular block given after the completion of the surgery.

Group 3 – General anaesthetic with no local anaesthesia

The intensity and duration of post-operative pain in each subject is carefully monitored by a questionnaire.

Discuss the probable differences in the course of the post-operative pain experienced in each of the three groups. Include in your answer a discussion of the mechanisms of post-operative pain.

Question 2

(40 minutes: 33 marks)

A new patient is referred to you for multiple extractions and insertion of an immediate denture. His medical history reveals that he is being treated with systemic corticosteroids for severe asthma. What is the significance of this medication to your treatment of his patient? Include in your answer a summary of normal actions of cortisol, and the mechanisms that control its secretion.

Question 3**(40 minutes: 33 marks)**

A 5 year old female patient is brought to your clinic by her father for relief from a painful tooth. Your receptionist tells you that the child has been getting increasingly anxious and has been sobbing (crying) out loudly during the 25 minutes she has been waiting. You observe the child in the waiting room, and note she takes a few deep, sobbing breaths, and then no breaths for about 40-50 seconds, then a few more deep sobs, followed again by temporary cessation of breathing. Your receptionist tells you that she has been doing this the whole time she has been waiting.

Explain the ventilation control mechanisms that result in her intermittent breathing behaviour.

What approach (es) would you use to return her breathing to normal before you examine her? Explain your rationale.

Question 4**(40 minutes: 33 marks)**

Write brief notes on *all* of the following:

1. infant swallowing pattern
2. the means by which water-soluble hormones influence the activities of their target cells
3. stroke
4. composition of saliva

Question 5**(40 minutes: 33 marks)**

Give an account of the autonomic nervous system under the following major headings:

- a) general organization
- b) relationship to somatic nervous system
- c) neurotransmitters and receptors
- d) role in fainting

Question 6**(40 minutes: 33 marks)**

Summarise the mechanisms that maintain normal calcium balance. Include in your answer:

- a) comments on how these may change at different stages of life, from infancy to old age;
- b) the major risk factors of osteoporosis
- c) a summary of the advice that you would give to an outwardly healthy patient whom you believed to be at risk for osteoporosis

End of Paper