

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

APPLIED PHYSICS DEPARTMENT

DIGESTIVE SYSTEM - SRA 3103

EXAMINATION

BSc HONOURS PART III : DECEMBER 2004 DURATION : 3 HOURS

ANSWER ALL QUESTIONS IN SECTION A AND ANY THREE QUESTIONS FROM SECTION B. SECTION A CARRIES 40 MARKS AND SECTION B CARRIES 60 MARKS.

SECTION A

1. (a) With respect to the use of contrast agents in the imaging of the gastro-intestinal tract, explain why barium sulphate is the contrast agent of choice. [5]
- (b) Describe the process of digestion in the stomach. [5]
- (c) Explain what is meant by a perforated duodenal ulcer and state its physiological consequences. [3]
- (d) (i) Explain the term *colostomy* [2]
(ii) Describe the specific problems associated with the preparation of a female out-patient with a colostomy for a barium enema examination [4]
- (e) Outline the equipment and accessories relevant for barium studies. [5]
- (f) Define the following pathological conditions and for each, state one examination that can be done to demonstrate it:
(i) imperforate anus,
(ii) hiatus hernia,
(iii) Crohn's disease,
(iv) ulcerative colitis. [6]
- (g) Explain the role of plain film radiography and contrast studies in the diagnosis of pathological conditions in salivary glands. [5]
- (h) (i) State *two* reasons why a patient may vomit. [1]
(ii) A patient vomits while being positioned for a radiograph, describe the care which should be given to such a patient. [4]

SECTION B

2. (a) Describe the gross and microscopic anatomy of the oesophagus. [10]
(b) State *two* congenital abnormalities of the oesophagus indicating how a diagnosis can be made radiographically. [3]
(c) (i) What are oesophageal varices? [2]
(ii) Describe a radiographic procedure to demonstrate oesophageal varices. [5]
3. (a) Describe the gross and microscopic anatomy of the pancreas. [10]
(b) Discuss imaging of the pancreas. [10]
4. (a) Compare and contrast the anatomy of the small and large bowel. [10]
(b) A patient presents to the imaging department with a history of Hirschsprung's disease. Describe the examination including the care of the patient that would be carried out to demonstrate this condition. [10]
5. (a) Outline *five* conditions in the digestive system that may lead to an acute abdomen. [5]
(b) Describe and give reasons for the projections you would take to demonstrate an acute abdomen [15]
6. Evaluate the role of CT, plain radiography, contrast studies and ultrasound in imaging of the digestive system. [20]