

**THE ROYAL AUSTRALIAN AND NEW ZEALAND COLLEGE OF
RADIOLOGISTS**

EXAMINATION FOR DIPLOMA, PART I

RADIATION ONCOLOGY
RADIOTHERAPEUTIC PHYSICS

Time allowed: 3 hours

ALL QUESTIONS are to be attempted. All questions are of equal value.
Clearly labeled diagrams should be drawn wherever relevant.

PART A

1. Describe the processes that occur in the absorption of an electron beam as it passes from air into a tissue medium and from tissue into an air cavity.
2. Describe the interactions involved in the production of X-radiation.

PART B

3. Discuss the roles of both simulators and computerised tomography in treatment planning.
4. Discuss in detail the advantages and disadvantages of using electron beams of appropriate energy over the use of X-rays in the treatment of malignant lesions in the head and neck regions.
5. Discuss the ward procedures that should be adopted to minimize the radiation hazards associated with patients being treated with unsealed radioactive substances and detail the emergency procedures required in the case of gross spillage of urine from a patient receiving radioactive iodine for the treatment of thyroid carcinoma.
6. Write notes on devices used with linear accelerators to obtain reproducibility in accurate field definition when a patient is undergoing treatment over a four week period.

September 199?