

# ***Examination for Diploma, Part 1***

## **Clinical Radiobiology**

Time allowed : 3 hours

ALL QUESTIONS ARE TO BE ATTEMPTED.

All questions are of equal value. Clearly labeled diagrams should be drawn wherever relevant.

1. In RADIOBIOLOGICAL terms, define "early responding" and "late responding" normal tissues. Describe two examples of each type of tissue with particular reference to their response to the fractionation schedules utilised in radiotherapy.
2. What is your definition of tolerance? What factors determine the tolerance of normal tissue to radiation? Illustrate your answer by reference to the response of spinal cord and heart to a course of radiotherapy.
3. Discuss the uncertainties involved when using combined chemo /radiotherapy treatments.
4. A 30 year man has had an orchidectomy for a seminoma of the testis and is to be treated with radiotherapy to the paraortic and ipsilateral iliac region. Inevitably some scatter radiation will occur to the remaining testicle. Assuming that the remaining testicle receives a total dose of approximately 0.50 Gy discuss the biological consequences of such a dose. What advise would you give regarding future fertility and hazards to progeny?
5. In RADIOBIOLOGICAL terms write short notes on THREE of the following:
  - (A) Rationale for accelerated fractionation in radiotherapy.
  - (B) Genetics of radiosensitivity.
  - (C) Radiation effects on the kidney.
  - (D) The initial
- 6.

JULY-AUGUST 1995