

# ***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. The modalities of surgery combined with megavoltage x-rays or of x-rays combined with chemotherapy have played important roles in oncological practice. Discuss the RADIOBIOLOGICAL basis for these treatment combinations with particular reference to the sequence of application.
2. Describe the types of cell populations involved and the RADIOBIOLOGICAL explanation for the long term complications that might be observed following mantle irradiation in the treatment of Hodgkin's disease.
3. Define and discuss the linear quadratic (L-Q) equation and discuss each individual term in the equation.
4. An elderly patient has refused surgery but requires radiotherapy treatment to a rapidly growing squamous cell carcinoma on the dorsum of his/her hand. The tumour is 2.0cm in diameter and 0.5cm thick. Discuss in RADIOBIOLOGICAL terms the advantages and disadvantages of the therapeutic options available.
5. In RADIOBIOLOGICAL terms write short notes on three of the following: (A) Gonadal failure in young adults following chemo /radiotherapy. (B) Late radiation effects in skin. (C) The oxygen enhancement ratio (O.E.R.). (D) The significance of chromosome aberrations following irradiation.
6. This question is of the multiple choice format and is to be answered on the separate QUESTION DOCUMENT provided according to the instructions of the document itself.

AUGUST 1994