

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. What factors are thought to be responsible for the large difference between potential cell doubling time and the actual doubling time observed for tumours. In RADIOBIOLOGICAL terms, give an account of the changes in doubling time produced in slow and fast growing tumors during a course of fractionated conventional radiotherapy.
2. In your opinion can the relative radiosensitivity of a tumour in vivo be predicted from an in vitro evaluation of the response to a 2 Gy dose of irradiation of early- passage cells derived from the same tumour? Compare and contrast the factors involved in each case.
3. A Radiotherapy Department has an average waiting time of 4 weeks from the time of first consultation to commencement of treatment. In RADIOBIOLOGICAL terms discuss the options available to attempt to minimise the ill effects of such waiting times. Discuss the advantages and disadvantages of such options.
4. In RADIOBIOLOGICAL terms discuss the potential hazards associated with the use of combined chemo/radiotherapy treatment. Consider both acute and late effects.
5. In RADIOBIOLOGICAL terms write short notes on three of the following:
 - A) Radiation-induced heart disease.
 - B) CHART.
 - C) Significance of the volume effect.
 - D) Repair of SLD.
6. This question is of multiple choice format and is to be answered on the separate QUESTION DOCUMENT provided, according to the instructions of the document itself.

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