

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Sc. (Radiotherapy Technology) (Sem.-6)

CLINICAL RADIOBIOLOGY

Subject Code : BSRT-602-19

M.Code : 91764

Date of Examination : 06-07-22

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Write briefly :

- a) Write the difference between normal and cancer cells.
- b) Define the term α/β ratio as it applies to the linear-quadratic model.
- c) What are the late side effects of radiotherapy?
- d) Define the key events in the cell cycle which involve DNA.
- e) List key molecules which drive the cell cycle.
- f) Write short notes on molecular control of the G_1 cell cycle checkpoint
- g) List the factors that influence tumour control probability.
- h) Define cell cycle checkpoints.
- i) Give the formula to calculate the cell loss factor in a solid tumour.
- j) What is a sensitizer? Give an example.

SECTION-B

2. Describe the different types of radiation-induced cell death, including the microscopic appearances and molecular mechanisms.
3. Draw a labelled diagram showing the main phases and the relative duration of each phase in the cell cycle.
4. Describe the effects of radiation on the human tissue.
5. What checkpoints occur in the cell cycle after ionising radiation exposure?
6. Name and describe the function of the major protein families that regulate cell cycle progression.

SECTION-C

7. Describe the pathogenesis of radiation-induced normal tissue injury.
8. Discuss the Linear Quadratic (LQ) concept of radiation cell kill in daily clinical practice.
9. Explain in detail the 5 R's of radiobiology and its significance in radiotherapy.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.