



**SRI DEVARAJ URS ACADEMY OF HIGHER EDUCATION & RESEARCH**

**(A DEEMED TO BE UNIVERSITY)**

**B.Sc. Allied Health Sciences Third Year Semester-VI**

**Examination**

**B.Sc. Radiotherapy Technology**

**Time : 3 Hrs.**

**Paper – I**

**[Max. Marks : 100]**

**Subject : Radiotherapy-I**

**Q.P Code: J6631**

*Your answers should be specific to the questions asked.*

*Draw neat labelled diagrams wherever necessary.*

**LONG ESSAY**

**2 X 10 = 20 Marks**

- 1 Define Stereotactic Radiation Therapy (SRT) and Stereotactic Radiosurgery. Explain differences between them. Name few clinical applications for each.
- 2 Write neatly about superficial Beta ray therapy and its properties of isotopes used for therapy.

**SHORT ESSAY (Answer any Ten)**

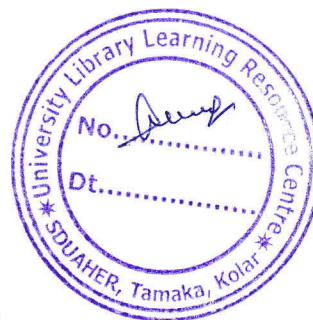
**10 X 5 = 30 Marks**

- 3 Explain the importance of Multi leaf collimators in radiotherapy.
- 4 Write a brief note on parts and working principle HDR brachytherapy units.
- 5 Explain the various tumor volumes with neat diagram.
- 6 Calculate the Time (min) required to deliver 200 cGy of dose to the tumor located at the depth of 5 cm (PDD = 76.7%, TMR = 85.1%) in SSD technique for the field size of 12 x 8 cm<sup>2</sup> (Output = 120 cGy/min) using single posterior (PA) field in Co-60 machine with 80 cm SSD.
- 7 What is Total Body Irradiation? Explain its role cancer treatment.
- 8 Write about cyber knife in detail.
- 9 What are the advantages of tomotherapy?
- 10 Volumetric modulated arc therapy technique in cancer treatment.
- 11 Output calibration of a telecobalt machine.
- 12 Draw a neat labelled diagram of a linear accelerator and write the parameters used for treatment time calculation.
- 13 Write about immobilization devices in radiotherapy.
- 14 Write about the principle of radiation protection and explain about it.

**SHORT ANSWERS (Answer any Ten)**

**10 X 3 = 30 Marks**

- 15 Define Equivalent Dose and Effective Dose
- 16 Define workload, use factor and occupancy factor.
- 17 What is background radiation?
- 18 Calculate the equivalent square field of 8 x 12 cm<sup>2</sup>, 10 x 15 cm<sup>2</sup>
- 19 Name 3 techniques for treating carcinoma rectum
- 20 Describe IMRT concept
- 21 What is back scatter factor?
- 22 What is skin sparing effect?
- 23 Why we are using T-rod in telecobalt machine?
- 24 Differences between primary and secondary barrier.
- 25 Write two brachytherapy radionuclides and their physical characteristics.
- 26 What are the stochastic effects of radiotherapy?





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**B.Sc. Allied Health Sciences Third Year Semester-VI**

**September 2022 Examination**

**B.Sc. Radiotherapy Technology**

**Paper – II**

[Max. Marks : 100]

**Time : 3 Hrs.**

**Subject : Radiotherapy-II**

**Q.P Code: J6632**

*Your answers should be specific to the questions asked.*

*Draw neat labelled diagrams wherever necessary.*

**LONG ESSAY**

**2 X 10 = 20 Marks**

- 1 What is Neo-adjuvant & Adjuvant radiotherapy? What are the advantages and disadvantages of each?  
Mention two examples for each with dose fractionation?
- 2 Tomotherapy

**SHORT ESSAY (Answer any Ten)**

**10 X 5 = 50 Marks**

- 3 Remote After loading HDR machine - Parts, Operation & precautions
- 4 Explain conformal radiotherapy
- 5 Cardiopulmonary resuscitation procedure
- 6 Hospital waste management
- 7 IMRT
- 8 Gamma Knife
- 9 Steps of CT simulation
- 10 Dynamic wedges - principle and uses
- 11 EPID - Explain its types, function and uses.
- 12 Volumetric modulated radiotherapy
- 13 Total body Radiotherapy
- 14 Explain daily position reproduction using CBCT. Types of errors and protocols

**SHORT ANSWERS (Answer any Ten)**

**10 X 3 = 30 Marks**

- 15 Expand MLC. Mention 3 uses of MLC
- 16 Name 3 types of Brachytherapy commonly practiced in Gynaecological cancers
- 17 Define Radical and Palliative radiotherapy
- 18 Name 3 techniques of Portal imaging used for daily position verification
- 19 What are tissue compensators and their advantages?
- 20 Write 3 advantages of HDR Brachytherapy over LDR Brachytherapy
- 21 What is Tomo-direct? Write about its applications?
- 22 Write 3 drawbacks of Tomotherapy over conventional LINAC
- 23 What is Last man out switch? How does it function? Write about its importance.
- 24 Define IGRT - Write its various applications
- 25 What is Brag peak and write about SOBP
- 26 Steps of X-ray simulation

