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 cm2 (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^2 , 10 x 15 cm^2

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?

SRI DEVARAJ URS ACADEMY OF HIGHER EDUCATION & RESEARCH

(A DEEMED TO BE UNIVERSITY)

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

September 2022 Examination

B.Sc. Radiotherapy Technology

Time : 3 Hrs. **Paper – II** **[Max. Marks : 100]**

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

* * *