SRI DEVARAJ URS ACADEMY OF HIGHER EDUCATION & RESEARCH

(A DEEMED TO BE UNIVERSITY)

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

September 2021 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?

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September 2021 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 Hemi body irradiation – explain in detail about the uses, dose, work up, procedure and complications.

2 Pre-treatment position verification - Portfilm, EPID, CBCT & Tomo-image.

SHORT ESSAY (Answer any Ten) **10 X 5 = 50 Marks**

3 Sterilization and preparation of Brachytherapy applicators

4 Explain importance of Immobilisation & mention various immobilisation devices.

5 Explain conformal radiotherapy

6 Cyber knife

7 Image guided radiotherapy

8 Explain the structure and function of Tomotherapy

9 Cardiopulmonary resuscitation

10 Radiation protectors

11 Name 3 radioactive sources used in remote after loading Brachytherapy. Write about them in brief

12 Confidentiality in handling patient data

13 Immobilization devices used in treatment of Ca Breast

14 Proton beam therapy

SHORT ANSWERS (Answer any Ten) **10 X 3 = 30 Marks**

15 Name 3 techniques of Portal imaging used for daily position verification

16 Define IGRT - Write its various applications

17 Advantages of VMAT over IMRT

18 Radiation protectors

19 Define standard error and random error

20 Name 3 most important OARs during Gynec brachytherapy.

21 Conformity index and Homogeneity index

22 Advantages of Proton beam therapy over IMRT

23 Waste management in Hospital

24 Confidentiality in data handling

25 Three Examples of Intraoperative Brachytherapy

26 Steps of X-ray simulation

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