SRI DEVARAJ URS ACADEMY OF HIGHER EDUCATION & RESEARCH

(A DEEMED TO BE UNIVERSITY)

B.Sc. Allied Health Sciences Third Year (Semester-V)

March 2023 Examination

B.Sc Radiotherapy Technology (RTT)

Time: 3 Hrs. **[Max. Marks: 100]**

Paper-I

Radiation Physics

Q.P Code: J5610

Your answers should be specific to the questions asked.
Draw neat labeled diagrams wherever necessary.

LONG ESSAY **2 X 10 = 20 Marks**

1 Draw the block diagram of linear accelerator and explain about the parts of it.
2 Explain the three basic principles of radiological protection? What is the annual dose limits prescribed by ICRP for occupational and public exposure?

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

3 Physical characteristics of five radionuclides used in Brachytherapy.
4 Explain the Intracavitary brachytherapy application simulation procedure.
5 Calculate the Monitor Units (MU) required to deliver 200 cGy of dose to the tumor located at the depth of 15 cm (PDD = 42.5%) in SSD technique for the field size of 15 x 15 cm^2 (Output factor for 15 x 15 cm^2 = 135.7919 cGy/MU).
6 Draw the Layout of a HDR brachytherapy and mention the parameters.
7 What is film badge? What are the different filters used?
8 Interlocks and the design of doors required for linear accelerator room.
9 Define and units of effective dose and Dose equivalent.
10 How do you perform a radiation survey of a linear accelerator room?
11 Explain setup errors in radiotherapy. How does it influence therapy? How can you reduce it?
12 Explain Point A and Point B with respect to cervical cancer.
13 How do you take care of the skin during radiotherapy?
14 What are the types of brachytherapy? Mention suitable examples.

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

15 Mention 2 late effects of radiation treatment and steps to prevent it?
16 Properties of X-rays.
17 Define percentage depth dose and mention the depend factors
18 Give short note of film badge
19 Define Primary and secondary barrier.
20 Write about the three principles of external radiation protection.
21 Dose limits to radiation worker and public.
22 Define half value thickness and tenth value thickness
23 Explain about SSD factor.
24 What are properties of tungsten target material?
25 AERB, BARC, ICRP, WHO, IAEA ,BRIT- write the abbreviation
26 What is the atomic number and mass number of iridium and write the properties of it.

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Paper-II

Principle and Practice of Radiotherapy

Q.P Code : J5620

Your answers should be specific to the questions asked.
Draw neat labeled diagrams wherever necessary.

LONG ESSAY **2 X 10 = 20 Marks**

1 Radiotherapy in oral cavity cancers

2 Radiotherapy planning in Ca Breast

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

3 Basal cell carcinoma

4 Differences between SAD and SSD techniques

5 Radiation sensitizers

6 Management of patient with Tracheostomy

7 Management of Pediatric patient undergoing Radiotherapy

8 German helmet technique for whole brain radiotherapy

9 Role of effective communication in Radiotherapy

10 Parts of Linear accelerator

11 Beam modifying devices

12 Describe in brief about ICBT

13 Role of Radiotherapy in Lymphoma

14 Treatment of Early stage Ca Glottis - Dose, Portals & Complications

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

15 Hospice

16 Symptoms of Cervical cancer

17 Name 3 Patient immobilization devices

18 3 commonly used palliative RT dose regimens

19 Define mean, median and mode

20 Risk factors for Skin cancers.

21 Grades of Mucositis

22 Hypo fractionated chest wall/Whole breast RT - Definition and Dose regimens

23 Side effects of Pelvic RT

24 Skin sparing effect of megavoltage beams

25 Definitive RT in Ca Esophagus - Dose and Portals

26 Name 3 OARs during Radiotherapy for Ca Esophagus

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