



SRI DEVARAJ URS ACADEMY OF HIGHER EDUCATION & RESEARCH

(A DEEMED TO BE UNIVERSITY)

B.Sc. Allied Health Sciences Second Year Semester-III

March / April 2026 Examination

B.Sc. Radiotherapy Technology

Time: 2 hrs 30 mins.

[Max. Marks: 80]

Subject: Fundamentals of Physics

Q.P Code: K3520

Your answers should be specific to the questions asked.

Draw neat labelled diagrams wherever necessary.

Long essay

(2x10=20marks)

1. Describe about the structure of atom : isotopes, isobars, isomers and isotones
2. What is Radioactive Equilibrium and discuss about transient and secular equilibrium with examples.

Short essay

(6x5=30marks)

3. Write about the properties of alpha, and beta radiation.
4. What are the difference between Half-wave and Full-wave rectifier?
5. Explain in detail about Characteristic x-rays.
6. Write a short note on cooling method of X-ray tube.
7. Name different types of interactions of photons with matter and explain about Compton Effect.
8. Write about Alpha decay.

Short answer

(10x3=30marks)

9. Explain Step –down transformer.
10. How target material will affect the quality and quantity of x-rays?
11. What is Ohm's law and coulomb's law
12. Write about the properties of tungsten target
13. What is meant by artificial radioactivity?
14. Name any six radioactive nuclides and its half-life.
15. Write about the properties of radium and its uses.
16. How exposure time and generator wave form will affect the quality and quantity of x-rays?
17. Define filtration and its types.
18. Draw the diagram of X ray tube

* * * *



SRI DEVARAJ URS ACADEMY OF HIGHER EDUCATION & RESEARCH

(A DEEMED TO BE UNIVERSITY)

B.Sc. Allied Health Sciences Second Year Semester-III

March / April 2026 Examination

B.Sc. Radiotherapy Technology

Time: 2.30 Hrs.

[Max. Marks: 80]

Subject: Radiation safety

Q.P Code: K3530

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

I. Long essay

2X10=20 Marks

1. Write in detail about physics of X-ray production with a neat diagram.
2. Explain the Thermoluminescence Dosimeter (TLD) with the working principle

II. Short essay

6X5=30 Marks

3. What is attenuation in an x-ray beam? Explain linear and mass attenuation coefficients.
4. Explain about equivalent dose and effective dose with weighting factors.
5. Define workload, use factor, and occupancy factor in X-ray installation.
6. Write about direct and indirect effect of radiation.
7. What are the dose limits for radiation workers, trainees and the public as per AERB?
8. Write the difference between stochastic and deterministic effect?

III. Short answer

10X3=30 Marks

9. What are the measures we have to take to prevent excessive exposure?
10. What are the dose reduction methods in pediatric radiography?
11. What is beta decay? Give example.
12. Define inverse square law.
13. Write a short note on area monitoring device.
14. Write the dose, organs and effect of early somatic effects due to partial body irradiation?
15. Write the expansion of AERB, MRI, ALARA, TLD, CT, and PET-CT.
16. Define hereditary effects.
17. What is LD 50/60?
18. Define mass defect and Binding energy.

* * * *



SRI DEVARAJ URS ACADEMY OF HIGHER EDUCATION & RESEARCH

(A DEEMED TO BE UNIVERSITY)

B.Sc. Allied Health Sciences Second Year Semester-III

March / April 2026 Examination

B.Sc. Radiotherapy Technology

Time: 2.30 Hrs.

[Max. Marks: 80]

Subject: Medical Physics

Q.P Code: K3540

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

I. Long essay

2X10=20 Marks

1. Explain in detail about the parts of x-ray tube with neat diagram.
2. Write briefly about Mammography.

II. Short essay

6X5=30 Marks

3. Write about 1st, 2nd and 3rd generation of CT.
4. Explain in detail about quality assurance test for Diagnostic X ray equipment.
5. Write a short note on artifacts of CT.
6. Explain about the generation and uses of electrical energy
7. What is the difference between Mobile X-ray and Portable X ray.
8. Define rectifier and explain the Half-wave rectifier with circuit diagram.

III. Short answer

10X3=30 Marks

9. Write the properties of x-ray.
10. Define grid and grid ratio.
11. Write the difference between CT and PET scanner
12. What is meant fuses and its types?
13. Write a note on 7th generation of CT.
14. Write about the limitations of Image intensifier system
15. How applied voltage (kVp) will affect the quality and quantity of x-rays?
16. Draw radiation hazard symbol for radioactive sources and x- ray facility.
17. Write the difference between stationary and rotating anode.
18. Mention the types of different modalities of X-ray equipment

* * * *