

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. Imaging Technology

Paper – 1

Subject: Fundamentals of Physics

Q.P Code: K3330

Time: 2.30 Hrs.

[Max. Marks: 80]

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

Long essay

(2x10=20marks)

1. Write in detail about properties of Alpha, Beta and Gamma radiation.
2. Explain conductors, insulators and semiconductors in brief.

Short essay

(6x5=30marks)

3. Write in detail about the construction and working of x-ray tube.
4. Write the difference between stationary anode and rotating anode.
5. Explain Radioactive decay and decay law.
6. Name different types of interactions of photons with matter and explain about pair production.
7. Explain radioactive equilibrium and its types.
8. What is rectifier and its types and explain about Full -wave rectifier with neat diagram.

Short answer

(10x3=30marks)

9. What is meant by Ionization and excitation?
10. Explain about Kirchhoff's law.
11. Explain Step –down transformer
12. Define Atomic number and mass number
13. Draw the diagram of nuclear reactor.
14. Define focal spot.
15. Write about the properties of X-rays.
16. Define photoelectric effect
17. How filtration will affect the quality and quantity of x-rays?
18. Write about the properties of proton.

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Paper – II

Subject: Radiation Safety

[Max. Marks: 80]

Q.P Code: K3340

Time: 2.30 Hrs.

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

I. Long essay

2X10=20 Marks

1. Define following parameters used in X ray Installation
 - a. Workload
 - b. Use-factor
 - c. Occupancy factor
 - d. Distance
 - e. Permissible limit
2. Explain the Thermoluminescence Dosimeter (TLD) with the working principle

II. Short essay

6X5=30 Marks

3. The exposure rate from a fluoroscopic X-ray machine is 5 R/min at 50 cm. What would be the exposure rates at (i) 40 cm, and (ii) 60 cm?
4. Write a note on Leakage Limits for X-ray Housing
5. Write a note on early somatic effect for whole body irradiation
6. Explain the Guidelines for Using TLD Badge.
7. Write the difference between stochastic and deterministic effect?
8. Write a short note on HVT and TVT and its relationship

III. Short answer

10X3=30 Marks

9. Write the expansion of AERB, MRI, ALARA, TLD, CT, and PET-CT.
10. What are the measures we have to take to prevent excessive exposure?
11. What is alpha decay? Give example.
12. Define hereditary effects.
13. Define half-life. What is the half-life of Co – 60, Ir – 192?
14. Write any 3 shielding material and its uses
15. Draw radiation hazard symbol for Radioactive sources and X ray facility
16. Write the properties of electromagnetic radiation
17. Write about lead apron
18. The exposure rate from X-ray machine is 10 R/min at 20 cm. What would be the exposure rates at 100 cm?

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

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B.Sc. Imaging Technology

Paper – III

Subject: Medical Physics

Q.P Code: K3350

[Max. Marks: 80]

Time: 2.30 Hrs.

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

I. LONG ESSAY

2X10=20 Marks

1. Define rectifier and mention its types with circuit diagram.
2. What are the factors influencing the quality and quantity of x-rays?

II. SHORT ESSAY

6x5=30 Marks

3. Write in detail about target of mammography units.
4. Write a short note on PET-CT
5. Write about 4th and 5th generation of CT
6. Define radiation. Mention its types with example.
7. Write a note on Structure of X ray film
8. Write an advantage and disadvantage of rotating anode

III. SHORT ANSWER

10x3=30 Marks

9. Write a note on 2nd generation of CT.
10. Explain about Insulator and earthling.
11. Write a short note on target material used in mammography unit
12. Tabulate the QA tests conducted in Diagnostic radiology and its tolerance value.
13. What is stationary anode?
14. Write a note on 6th generation of CT
15. Write a short note on congruence of radiation and optical field with tolerance value.
16. Write a note on types of grid.
17. What is meant fuses and its types?
18. Define QA and Why QA in Diagnostic Radiology?

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