SRI DEVARAJ URS ACADEMY OF HIGHER EDUCATION & RESEARCH

(A DEEMED TO BE UNIVERSITY)

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

March 2025 Examination

B.Sc. Imaging Technology

Time: 2.30 Hrs. **Paper – 1** **[Max. Marks: 80]**

Subject: Fundamentals of Physics

Q.P Code: K3330

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

Long essay (2x10=20marks)

1. What are the factors influencing the quality and quantity of x-rays?
2. What are rectifier and its types? Explain about it with neat circuit.

Short essay (6x5=30marks)

3. Write in detail about Bremsstrahlung X-rays.
4. What are radionuclides? Give example for radionuclides used in medicine.
5. Write about the properties of X-rays and gamma radiation
6. Explain the principles of Semiconductors.
7. Explain in detail about the Principles of nuclear reactor.
8. Name different types of interactions of photons with matter and explain about photoelectric effect.

Short answer (10x3=30marks)

9. Define secular equilibrium with examples.
10. Define Compton Effect.
11. Write about properties of beta particle.
12. Define kVp and mAs.
13. Explain radioactive decay law**.**
14. What is meant Florescence and Phosphorescence?
15. What is rotating anode.
16. Define Thermionic emission
17. Write about the properties of neutron.
18. Write about the properties of radium and its uses.

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

March 2025 Examination

B.Sc. Imaging Technology

Time: 2.30 Hrs. **Paper – 2**

Subject: Radiation safety **[Max. Marks: 80]**

Q.P Code: K3340

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

Long essay **(2x10=20marks)**

1. Write in detail about the film badge and Pocket dosimeter with a neat diagram
2. Write in detail about the early somatic effects of irradiation.

Short essay **(6x5=30marks)**

3. Define Exposure and absorbed dose with its units
4. Write a short note on HVT and TVT and its relationship
5. Explain the factors which affect the quality and quantity of x-rays?
6. What is radioactivity explain natural and artificial radioactivity with examples
7. What is the difference between Photoelectric and Compton effect
8. A radiographer is performing barium examination under fluoroscopy and the equipment is 'ON' for 3 minutes for each examination. The radiation level at the location of the radiographer is 100 mR/h. How many such procedures the radiographer can carry out per week?

Short answer **(10x3=30marks)**

9. What is the importance of shielding in radiation protection?
10. Define occupancy factor and use factor.
11. Write about deterministic effects with example?
12. Define half-life. What is the half-life of Co – 60, Ir – 192?
13. Define effective dose with weighting factor
14. Define coherent scattering in photon interaction
15. Draw radiation hazard symbol for Radioactive sources and X ray facility
16. Write the expansion of AERB, MRI, ALARA, TLD, CT, PET-CT
17. Why the public dose limit is less?
18. Define secondary radiation

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

March 2025 Examination

B.Sc. Imaging Technology

Time: 2.30 Hrs. **Paper – 3**

Subject: Medical Physics **[Max. Marks: 80]**

Q.P Code: K3350

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

Long essay (2x10=20marks)

1. Define rectifier and mention its types with circuit diagram.
2. Write in detail about generation of CT scanner.

Short essay (6x5=30marks)

3. Explain about filters, types and uses.
4. Write about dental x-ray units.
5. Explain about High Tension (HT) cable.
6. What are the differences between fixed radiography and fluoroscopy unit?
7. Write in detail about compression peddle in mammography units.
8. What are the Factors affecting quality and quantity of x-ray.

Short answer (10x3=30marks)

9. What is meant Heel effect?
10. Write about properties of tungsten and molybdenum
11. Define Tube voltage and tube current.
12. Draw and label the parts of the x-ray tube.
13. Define Heat unit and electron volt.
14. Write a short note on Tube cooling in X ray tube
15. Write a short on X-ray tube housing.
16. Define focal spot.
17. What is rotating anode?
18. Write the difference between Radiotherapy and Radiology

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