Rajiv Gandhi University of Health Sciences, Karnataka

II Year B.Sc. Imaging Technology Degree Examination – 08-May-2025

Time: Three Hours **Max. Marks: 60 Marks**

Radiographic Photography and Image Processing (RS-3)
Q.P. CODE: 1355

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

LONG ESSAYS (Answer any Two) **2 x 10 = 20 Marks**

1. Define unsharpness. Describe the different types of it and how you identify the sources of unsharpness.
2. What is an Image? Describe in detail Image Characteristics.
3. Describe in detail factors influencing the radiographic image.

SHORT ESSAYS (Answer any Five) **5 x 5 = 25 Marks**

4. What are the Characteristics of film base?
5. Intensification factor
6. Drying Methods in Automatic Processor
7. Safelight Test
8. Describe in detail Modular daylight film-handling System.
9. Advantages and dis advantages of miniaturization
10. Crossover effect

SHORT ANSWERS (Answer any Five) **5 x 3 = 15 Marks**

11. Difference Between silver halides and metallic silver
12. Advantages and disadvantages of duplitized film
13. Log relative exposure
14. Film feed section in automatic processor
15. Elongation and foreshortening
16. Care and Maintenance of intensifying screen
17. Type of hangers

Rajiv Gandhi University of Health Sciences, Karnataka

II Year B.Sc. Medical Imaging Technology Degree Examination – 08-May-2025

Time: Three Hours **Max. Marks: 100 Marks**

IMAGING PHYSICS AND DARK ROOM TECHNIQUES (RS-4)

Q.P. CODE: 3291

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

LONG ESSAYS (Second Question Choice) **2 x 10 = 20 Marks**

1. Explain briefly radiographic image quality in terms of density, noise, contrast, sharpness and resolution

2. Write in detail about automatic processor
   OR
   Write in detail about the silver recovery

SHORT ESSAYS (Question No 5 & 10 choice) **10 x 5 = 50 Marks**

3. Magnification radiography
4. Film artefacts and types
5. Types of intensifying screen and explain the working differences between them
   OR
   Explain halation artefacts and the remedy
6. Explain the temperatures maintenance in the automatic processor
7. Explain safe light test
8. Discuss the factors affecting the radiographic image quality
9. Care and maintenance of x-ray cassette
10. Factors affecting the image quality
    OR
    Draw and explain the types of film dryers
11. What are the COSHH regulations?
12. Explain the functions of fixer and constituents of fixer

SHORT ANSWER **10 x 3 = 30 Marks**

13. Explain FID
14. Non curl backing
15. Importance of pH in manual processing
16. Differential attenuation
17. White light in darkroom
18. Ventilation of darkroom
19. Fluorescence
20. Scatter radiation
21. Chemical film artefacts
22. Types of fog

Rajiv Gandhi University of Health Sciences, Karnataka

II Year B.Sc. Medical Imaging Technology Degree Examination – 13-May-2025

Time: Three Hours **Max. Marks: 100 Marks**

RADIOGRAPHIC POSITIONING AND TECHNIQUES (RS-4)

Q.P. CODE: 3292

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

LONG ESSAYS (Second Question Choice) **2 x 10 = 20 Marks**

1. Paediatric radiography
2. Mention dental formula and describe bitewing radiography
   OR
   Describe basic views for knee and supplementary views for knee joint

SHORT ESSAYS (Question No 5 & 10 choice) **10 x 5 = 50 Marks**

3. Explain Schuller's view in detail
4. Name facial bones and describe occipito-mental view
5. Describe projection for soft tissue neck
   OR
   Describe ankle stress projection
6. Describe Femur AP and lateral view
7. Describe radiographic projection for thumb
8. Apicogram
9. Describe merchants view
10. Explain pelvic lateral view
    OR
    Explain Scottie dog view
11. Describe flexion and extension projections for lumbar spine
12. Describe chest lateral and Lordotic view

SHORT ANSWER **10 x 3 = 30 Marks**

13. Projection for foreign body in the eye
14. What is notch view?
15. Settegast method
16. Name the tarsal bones
17. Views for lower ribs
18. Projections for little finger
19. Projection for paediatric club foot
20. Name all special views for shoulder
21. Occlusal radiography
22. Projection for nasal fracture

Rajiv Gandhi University of Health Sciences, Karnataka

II Year B.Sc. Imaging Technology Degree Examination – 23-May-2025

Time: 3 Hours **Max. Marks: 40 Marks**

Physics of Radiology – (RS-3)
Q.P. Code: 1353

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary
(Note: Both QP Codes 1353 and 1354 are to be answered within total duration of 3 hours)

LONG ESSAYS (Answer any One) **1 x 10 = 10 Marks**

1. Explain the construction, working and design of a fixed anode X-ray tube with a neat, labelled diagram.
2. Factors influencing the intensity and quality of X-rays.

SHORT ESSAYS (Answer any Three) **3 x 5 = 15 Marks**

3. Properties of alpha, beta and gamma rays.
4. Explain filtration and collimation effects.
5. Ionization and excitation.
6. Photo electric effect.

SHORT ANSWERS (Answer any Five) **5 x 3 = 15 Marks**

7. **Transformer Losses**
8. Half value thickness.
9. Semiconductor diode.
10. Structure of atom.
11. Inverse square law.
12. Half wave rectification.

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Rajiv Gandhi University of Health Sciences, Karnataka

II Year B.Sc. Imaging Technology Degree Examination – 23-May-2025

Time: 3 Hours **Max. Marks: 40 Marks**

Physics of Radiology – (RS-3)
Q.P. Code: 1354

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary
(Note: Both QP Codes 1353 and 1354 are to be answered within total duration of 3 hours)

LONG ESSAYS (Answer any One) **1 x 10 = 10 Marks**

1. **Explain about the various methods of interaction of X-rays with matter**
   Or

   Gas filled detectors
2. Discuss recommendations of ICRP and AERB dose limit to public, children and radiation worker. How to minimize the radiation exposure in a radiology department.

SHORT ESSAYS (Answer any Three) **3 x 5 = 15 Marks**

3. Personnel monitoring devices.
4. **Radiolysis of water**
5. Types of Grids.
6. **Structural shielding design in radiology department**

SHORT ANSWERS (Answer any Five) **5 x 3 = 15 Marks**

7. Collimators.
8. ALARA.
9. Chromosomal aberration.
10. **Personnel protective devices**
11. **Stochastic effect and non-stochastic**
12. Early and late effects.

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Rajiv Gandhi University of Health Sciences, Karnataka

Second Year B.Sc. Medical Imaging Technology Degree Examination – 23-May-2025

Time: Three Hours **Max. Marks: 100 Marks**

Radiation Physics: Medical Physics and Radiation Safety in Radio Diagnosis (RS-4)

Q.P. CODE: 3290

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

LONG ESSAYS (Second Question Choice) **2 x 10 = 20 Marks**

1. Explain about production of x-rays? Explain properties of x-ray.

2. Explain in detail anti-scatter grid in follow in headings:
   a) Construction b) Working c) Type d) Grid ratio e) Errors f) Advantages and disadvantages
   OR
   Explain about a) Main voltage compensators b) Filament circuit c) Control of tube current

SHORT ESSAYS (Question No 5 & 10 choice) **10 x 5 = 50 Marks**

3. Space charge effect.
4. Filters.
5. Radioactivity.
   OR
   Space charge compensator.
6. Scintillation detector.
7. TLD.
8. Transformer.
9. Beam centring device.
10. Grids.
    OR
    Fluoroscopy
11. Line focus principle
12. 3-phase circuits.

SHORT ANSWER **10 x 3 = 30 Marks**

13. Self rectifiers.
14. Tube rating chart.
15. Film badges.
16. Collimators.
17. Characteristic spectrum.
18. Atoms.
19. Vacuum diode.
20. Circuit breakers.
21. Exponential attenuation.
22. Define half life and mean life.

Rajiv Gandhi University of Health Sciences, Karnataka

II Year B.Sc. Imaging Technology Degree Examination – 28-Oct-2025

Time: Three Hours **Max. Marks: 40 Marks**

Physics of Radiology – (RS-3)
Q.P. Code: 1353

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary
(Note: Both QP Codes 1353 and 1354 are to be answered within total duration of 3 hours)

LONG ESSAYS (Answer any One) **1 x 10 = 10 Marks**

1. Explain the principle and working of a AC transformer with a neat diagram.
2. Explain the interaction of X-rays with matter with neat diagram.

SHORT ESSAYS (Answer any Three) **3 x 5 = 15 Marks**

3. Semiconductor
4. Vacuum diode
5. Radioactive decay law
6. Effective and Equivalent dose

SHORT ANSWERS (Answer any Five) **5 x 3 = 15 Marks**

7. Anode heel effect
8. Mass attenuation coefficient
9. Alpha decay
10. Thermionic emission
11. Unit of Exposure
12. Fluorescence

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Rajiv Gandhi University of Health Sciences, Karnataka

II Year B.Sc. Imaging Technology Degree Examination – 28-Oct-2025

Time: 3 Hours **Max. Marks: 40 Marks**

Radiation Physics & Medical Physics – (RS-3)

Q.P. Code: 1354

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary
(Both QP Codes 1353 and 1354 are to be answered within total duration of 3 hours)

LONG ESSAYS (Answer any One) **1 x 10 = 10 Marks**

1. Discuss in detail about construction and working of x-ray tube

2. **Explain in detail about the basic interactions between X rays and matter**

   Or

   Explain in detail about the biological effects of radiation and write a note on Radiolysis of water?

SHORT ESSAYS (Answer any Three) **3 x 5 = 15 Marks**

3. Digital Fluroscopy
4. Full and half wave rectifier
5. Portable radiography
6. Care and maintenance of X-ray tube

SHORT ANSWERS (Answer any Five) **5 x 3 = 15 Marks**

7. Grids
8. Half value layer
9. ALARA
10. Thermoluminscence dosimeter (TLD)
11. Gas filled detectors
12. Ten day rule and Twenty Eight day rule

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Rajiv Gandhi University of Health Sciences, Karnataka

II Year B.Sc. Imaging Technology Degree Examination – 30-Oct-2025

Time: Three Hours **Max. Marks: 60**

Radiographic Photography and Image Processing (RS-3)
Q.P. CODE: 1355

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

LONG ESSAYS (Answer any Two) **2 x 10 = 20 Marks**

1. Discuss in detail about various steps used in automatic processing
2. Explain about silver recovery methods
3. Describe in detail about types and layers of x-ray films

SHORT ESSAYS (Answer any Five) **5 x 5 = 25 Marks**

4. Replenisher
5. Types of cassette
6. Factors affecting image quality
7. Constituents of fixer
8. Day light film processing method
9. Film faults
10. Types of entrance

SHORT ANSWERS (Answer any Five) **5 x 3 = 15 Marks**

11. Resolution
12. Safe light filters
13. Quantum Mottle
14. Difference between silver halides and metallic silver
15. Phosphor
16. Density
17. Umbra

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Rajiv Gandhi University of Health Sciences, Karnataka

II Year B.Sc. Medical Imaging Technology Degree Examination – 28-Oct-2025

Time: Three Hours **Max. Marks: 100 Marks**

RADIATION PHYSICS
Medical Physics & Radiation Safety in Radio Diagnosis (RS-4)
Q.P. CODE: 3290

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

LONG ESSAYS (Second Question Choice) **2 x 10 = 20 Marks**

1. Write in detail about interaction of radiation with matter
2. Explain briefly types of gas filled detector

   OR

   Define transformer. Explain its working and types. Add a note on loss of transformer

SHORT ESSAYS (Question No 5 & 10 choice) **10 x 5 = 50 Marks**

3. Discuss the cardinal principle of radiation protection
4. Write a short note on fuses
5. Explain X-ray room design with diagram

   OR

   Write a note on radiolysis of water

6. Illustrate the design and working of vidicon with a diagram
7. Explain radiation units and quantities
8. Write in detail about somatic effect of radiation
9. HVL and TVL
10. List the personnel monitoring devices and explain in detail about Thermoluminescent dosimeter

    OR

    Beam restricting devices

11. Radiation protection during fluoroscopic procedure
12. List the advantages of grid and explain in details about grid cut-off

SHORT ANSWER **10 x 3 = 30 Marks**

13. ALARA
14. Properties of x-rays
15. P-n junction rectifier
16. Anode cooling chart
17. Reed switch
18. 10 day rule and 28 day rule
19. Draw a neat labelled diagram of image intensifier
20. Explain heavy metal filter
21. Gas filled x-ray tube
22. Earthing

Rajiv Gandhi University of Health Sciences, Karnataka

II Year B.Sc. Medical Imaging Technology Degree Examination
–30-Oct- 2025

Time: Three Hours **Max. Marks: 100 Marks**

IMAGING PHYSICS AND DARK ROOM TECHNIQUES (RS-4)

Q.P. CODE: 3291

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

LONG ESSAYS (Second Question Choice) **2 x 10 = 20 Marks**

1. Explain in details the construction and types of radiographic films
2. Explain the factors affecting the radiographic image quality
   OR
   Write in details about manual photographic processing

SHORT ESSAYS (Question No 5 & 10 choice) **10 x 5 = 50 Marks**

3. Discuss the steps involved in the manufacturing of "Film emulsion"
4. Sensitometry and its types
5. Differentiate between silver halide and metallic silver
   OR
   Difference between light sensitive and x-ray sensitive emulsion
6. Radiographic mottle
7. Safelight test
8. Write a short note on Film Artifacts
9. Discuss the factors affecting photographic performance
10. Darkroom design and construction
    OR
    Explain silver recovery by metallic replacement
11. Rare earth phosphors
12. Working of vacuum cassette

SHORT ANSWER **10 x 3 = 30 Marks**

13. Explain Elongation and Foreshortening
14. Care and maintenance of automatic processor
15. Fog and its types
16. Solarization
17. Film hopper
18. Fluorescence and phosphorescence
19. Short note on film storage
20. Draw a neat labelled diagram of intensifying screen
21. Constituents of fixer replenisher
22. Penumbra