

**B.Sc. RADIOLOGY IMAGING TECHNOLOGY**  
(New Syllabus 2014-2015)  
**SECOND YEAR**  
**PAPER II – X-RAY FILM/IMAGE PROCESSING TECHNIQUES**  
(INCLUDING DARK ROOM TECHNIQUES)

*Q.P. Code: 801832*

**Time: Three Hours**

**Maximum: 100 Marks**

**Answer all questions**

**I. Elaborate on:**

**(3 x 10 = 30)**

1. Draw the cross section of Single Sided Emulsion Film and explain.
2. Describe various steps and methods of Manual Processing with illustrative diagram.
3. Explain in detail with appropriate diagrams, the construction of Intensifying Screens.

**II. Write notes on:**

**(8 x 5 = 40)**

1. Safe Light.
2. Penumbra.
3. Fluorescence.
4. Rare earth screens.
5. Artifacts in X-ray films.
6. Constructions of automatic film processor.
7. Uses of single coated X-ray film.
8. Types of X-ray Cassettes.

**III. Short answers on:**

**(10 x 3 = 30)**

1. Dark room safe light.
2. Sodium thiosulphate.
3. Replenished.
4. Gelatin.
5. Fog.
6. Fluorescence.
7. Factors affecting focal spot size.
8. Maintenance of Cassette.
9. Intensification factor.
10. Cleaning of automatic Processor.

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**PAPER II – X-RAY FILM/IMAGE PROCESSING TECHNIQUES**  
**(INCLUDING DARK ROOM TECHNIQUES)**

*Q.P. Code: 801832*

**Time: Three Hours**

**Maximum: 100 Marks**

**Answer all questions**

**I. Elaborate on:** **(3 x 10 = 30)**

1. Define contrast and various factors that affect contrast.
2. Explain about automatic film processing.
3. Discuss in detail about doubled coated X-ray film structure.

**II. Write notes on:** **(8 x 5 = 40)**

1. How will you test for screen contact?
2. Characteristic curve of X-ray emulsion.
3. Care of X-ray cassette.
4. Screen mottle.
5. Types of intensifying screen.
6. Safe light.
7. Artifacts in X-ray films.
8. Rare earth screens.

**III. Short answers on:** **(10 x 3 = 30)**

1. Luminescence.
2. Laser camera.
3. Grid.
4. Curved cassette.
5. Latent image.
6. Processing faults.
7. X-ray phosphors.
8. Flexible cassette.
9. What is pH value?
10. Dichroic fog.

[LL 0817]

AUGUST 2017

Sub. Code: 1832

**B.Sc. RADIOLOGY IMAGING TECHNOLOGY**  
**SECOND YEAR**  
**PAPER II – X-RAY FILM/IMAGE PROCESSING TECHNIQUES**  
**(INCLUDING DARK ROOM TECHNIQUES)**

*Q.P. Code: 801832*

**Time: Three Hours**

**Maximum: 100 Marks**

**Answer all questions**

**I. Elaborate on:** **(3 x 10 = 30)**

1. Discuss in detail about the construction of double coated X-ray film.
2. Describe in detail about the design of darkroom and its entrance.
3. Explain elaborately the X-ray film processing.

**II. Write notes on:** **(8 x 5 = 40)**

1. Describe the characteristic curve of X-ray film.
2. Explain the various film handling artifacts.
3. Discuss about absorption and conversion efficiency of screen.
4. Write briefly about screen film contact. How will you test for screen film contact?
5. Briefly explain the mechanism and theory of Latent image formation.
6. List out the constitution of fixer solution and explain their functions.
7. Discuss about manual versus automatic processing.
8. Maintenance of automatic film processor.

**III. Short answers on:** **(10 x 3 = 30)**

1. Describe Storage of X-ray Films.
2. Describe Crossover Effect.
3. Describe Luminescence.
4. Describe care of intensifying screens.
5. Describe Reciprocity law in screen film combination.
6. Describe Law of photochemistry.
7. Describe pH Scale.
8. Describe Safe Light.
9. Describe Cassette pass box.
10. Describe Laser camera.

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[LM 0218]

FEBRUARY 2018

Sub. Code: 1832

**B.Sc. RADIOLOGY IMAGING TECHNOLOGY  
SECOND YEAR  
PAPER II – X-RAY FILM/IMAGE PROCESSING TECHNIQUES  
(INCLUDING DARK ROOM TECHNIQUES)**

*Q.P. Code: 801832*

**Time: Three Hours**

**Maximum: 100 Marks**

**Answer all questions**

**I. Elaborate on:**

**(3 x 10 = 30)**

1. Discuss in detail about the construction of Intensifying Screen.
2. Describe Automatic Film Processor and its types.
3. Describe Manual Film Processing in detail.

**II. Write notes on:**

**(8 x 5 = 40)**

1. Discuss about direct exposure film and its applications.
2. Discuss the types of intensifying screen phosphor materials and their significance.
3. Explain about the speed of screen film combination.
4. Describe the principle of Photo Stimulable Phosphor imaging.
5. List out the constitution of Developer Solution and explain their functions.
6. Write briefly about the Processor related artifacts.
7. Darkroom Illumination.
8. Darkroom Entrance.

**III. Short answers on:**

**(10 x 3 = 30)**

1. Draw a characteristic curve of X-ray emulsion and label.
2. Mammography film.
3. Luminescence and Phosphorescence.
4. Intensifying factor.
5. Latent Image formation.
6. Replenishment of processing chemicals.
7. Storage of unexposed films.
8. ID Printer.
9. X-ray Viewing Room and Equipments.
10. Describe Pass Box.

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*Q.P. Code: 801832*

**Time: Three Hours**

**Maximum: 100 Marks**

**Answer all questions**

**I. Elaborate on:**

**(3 x 10 = 30)**

1. Describe about the principle and features of automatic processing unit with diagram.
2. Define Dark room. Explain the different types of Dark room entrances.
3. What are the factors that affect the unsharpness of Radiographic Image?

**II. Write notes on:**

**(8 x 5 = 40)**

1. What are the constituents of developer solution? Explain each of them.
2. Describe the construction of Double coated X-Ray film with diagram.
3. What is Silver recovery? Describe the Electrolysis method of silver recovery.
4. Describe about formation of Latent Image.
5. Explain two different characteristic curve of Gamma and Latitude.
6. How will you store unexposed X-Ray film in your department?
7. Define contrast. Explain about the types of contrast.
8. Describe about picture achieving and communication system.

**III. Short answers on:**

**(10 x 3 = 30)**

1. What is pH Scale?
2. What is latent image?
3. What is "PENUMBRA"?
4. What is safe light? Why it is used?
5. What is normal developing time in manual and automatic processing?
6. What is Replenisher in developer?
7. Define sensitive emulsion layer.
8. What is Optical disc?
9. Define Film achieving system.
10. What is Film Latitude?

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**B.Sc. RADIOLOGY IMAGING TECHNOLOGY  
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*Q.P. Code: 801832*

**Time: Three Hours**

**Maximum: 100 Marks**

**Answer all questions**

**I. Elaborate on: (3 x 10 = 30)**

1. Describe about construction of Double coated X-Ray Film with Diagram.
2. What are the constituents of fixer solution and explain each of them?
3. Define Dark room and Describe about various types of Dark room entrances.

**II. Write notes on: (8 x 5 = 40)**

1. What are the factors that affect the unsharpness of the Image?
2. Describe Safe Light.
3. Describe the cross section view of single coated X-Ray film with diagram.
4. Mammography film.
5. Describe about the types of Radiographic contrast.
6. Explain about the automatic processor with diagram.
7. What is computed Radiograph? Explain the principle of computed Radiography.
8. Describe about the Picture Archiving and Communication System (PACS).

**III. Short answers on: (10 x 3 = 30)**

1. What is latent image?
2. Define Hatch box.
3. What is Hardener?
4. Define Gamma of Characteristic curve.
5. What is Film Hopper?
6. What is Replenisher? Why is it used?
7. What is Silver recovery?
8. What is Buffer solution?
9. What is Clearing time and Fixing time?
10. Define Film Sharpness.

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[LP 0819]

AUGUST 2019

Sub. Code: 1832

**B.Sc. RADIOLOGY IMAGING TECHNOLOGY  
SECOND YEAR**

**PAPER II – X-RAY FILM/IMAGE PROCESSING TECHNIQUES  
(INCLUDING DARK ROOM TECHNIQUES)**

*Q.P. Code: 801832*

**Time: Three Hours**

**Maximum: 100 Marks**

**Answer all questions**

**I. Elaborate on: (3 x 10 = 30)**

1. What is an intensifying screening? Discuss in detail about construction and working of intensifying screen.
2. Draw the cross section of Single Sided Emulsion Film and explain.
3. Describe the constituents of fixer and developer. Explain the manual film developing.

**II. Write notes on: (8 x 5 = 40)**

1. Replenisher.
2. Mammography cassette.
3. Film Artifacts.
4. Fog.
5. Luminescence.
6. Types of radiographic mottle.
7. Handling of exposed and unexposed films.
8. Developing agents.

**III. Short answers on: (10 x 3 = 30)**

1. Curved cassette.
2. Latent image.
3. Crossover Effect.
4. Factors affecting focal spot size.
5. Intensification factor.
6. Cleaning of automatic Processor.
7. What is pH value?
8. Dichroic fog
9. Grid.
10. Safe light.

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[LQ 0220]

FEBRUARY 2020

Sub. Code: 1832

**B.Sc. RADIOLOGY IMAGING TECHNOLOGY  
SECOND YEAR**

**PAPER II – X-RAY FILM/IMAGE PROCESSING TECHNIQUES  
(INCLUDING DARK ROOM TECHNIQUES)**

*Q.P. Code: 801832*

**Time: Three Hours**

**Maximum: 100 Marks**

**Answer all questions**

**I. Elaborate on:** **(3 x 10 = 30)**

1. Discuss in detail about automatic film processing.
2. Define radiographic contrast? Discuss various that affect contrast.
3. Describe in detail about the characteristic curve.

**II. Write notes on:** **(8 x 5 = 40)**

1. Film screen contact test.
2. Constituents of a developer.
3. Artifacts in X-ray films.
4. Rare earth screens.
5. Latent image.
6. Uses of single coated X-ray film.
7. Dark room.
8. Silver recovery.

**III. Short answers on:** **(10 x 3 = 30)**

1. Safe lights in dark room.
2. Halation.
3. Different sizes of screen-film cassettes.
4. Various speeds of intensifying screens.
5. Sodium thiosulphate.
6. Double sided film.
7. Curved cassette.
8. Grid.
9. Maintenance of cassette.
10. X-ray phosphors.

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**THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY**

**[AHS 0321]**

**MARCH 2021**

**Sub. Code: 1832**

**(AUGUST 2020 EXAM SESSION)**

**B.Sc. RADIOLOGY IMAGING TECHNOLOGY**

**SECOND YEAR (Regulation 2014-2015)**

**PAPER II – X-RAY FILM/IMAGE PROCESSING TECHNIQUES**

**(INCLUDING DARK ROOM TECHNIQUES)**

***Q.P. Code : 801832***

**Time: Three hours**

**Answer ALL Questions**

**Maximum: 100 Marks**

**I. Elaborate on:**

**(3 x 10 = 30)**

1. Write the steps of film processing.
2. Write in detail about double coated film.
3. Describe in detail about the characteristic curve.

**II. Write notes on:**

**(8 x 5 = 40)**

1. Constructions of automatic film processor.
2. Rare earth screens.
3. Penumbra.
4. Screen – Film contact Test.
5. Characteristic curve of X-ray emulsion.
6. Care of X-ray cassette.
7. Mammography Cassette.
8. Day light printer.

**III. Short answers on:**

**(10 x 3 = 30)**

1. Rollers in Automatic Processor.
2. Safe light.
3. Dichroic fog.
4. Latent image.
5. Grid.
6. X-ray phosphors.
7. Cleaning of automatic Processor.
8. Curved cassette.
9. Sodium thiosulphate.
10. Intensification factor.

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**THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY**

[AHS 0222]

**FEBRUARY 2022  
(AUGUST 2021 EXAM SESSION)**

**Sub. Code: 1832**

**B.Sc. RADIOLOGY IMAGING TECHNOLOGY  
SECOND YEAR (Regulation 2014-2015)  
PAPER II – X-RAY FILM/IMAGE PROCESSING TECHNIQUES  
(INCLUDING DARK ROOM TECHNIQUES)  
*Q.P. Code : 801832***

**Time: Three hours**

**Answer ALL Questions**

**Maximum: 100 Marks**

**I. Elaborate on:**

**(3 x 10 = 30)**

1. Components of intensifying screens, different speed types and its applications.
2. Draw schematic diagram of film transport mechanism in Automatic Film Processor and explain the processing cycle.
3. Write notes on different types and causes of
  - a) Film Fog
  - b) Radiographic Artifacts.

**II. Write notes on:**

**(8 x 5 = 40)**

1. Luminescence its types.
2. Draw a characteristic curve of X-ray emulsion and label the curve.
3. Cross section of double coated film
4. Direct X-Ray Films and its applications
5. Types of safe lights used in dark room and its essential features.
6. Screen Film Contact test
7. Rare Earth Phosphors
8. Intensification Factor

**III. Short answers on:**

**(10 x 3 = 30)**

1. Film hoppers
2. Grid factor
3. Sodium Thiosulphate
4. PH values of Developer, Rinser and Fixer solution
5. IOPA Film
6. Purpose of lead backing in cassettes
7. Types of viewing box.
8. Actinic Marker
9. Image Contrast
10. PACS and RIS

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**THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY**

[AHS 0922]

SEPTEMBER 2022

Sub. Code: 1832

(FEBRUARY 2022 & AUGUST 2022 EXAM SESSIONS)

**B.Sc. RADIOLOGY IMAGING TECHNOLOGY**

**SECOND YEAR (Regulation from 2014-2015)**

**PAPER II – X-RAY FILM / IMAGE PROCESSING TECHNIQUES (INCLUDING DARK ROOM TECHNIQUES)**

*Q.P. Code : 801832*

**Time: Three hours**

**Answer ALL Questions**

**Maximum: 100 Marks**

**I. Elaborate on :**

**(3 x 10 = 30)**

1. Discuss in detail about the various components of a double coated emulsion film.
2. Discuss in detail about the constituents of a fixer solution.
3. Discuss about the construction of dark room in detail.

**II. Write notes on:**

**(8 x 5 = 40)**

1. Construction of Single coated film.
2. Discuss about the common errors during automatic film processing.
3. Safe lighting in dark rooms.
4. What is contrast? Explain about its various types.
5. Write down the importance of temperature in manual film processing.
6. Write down the factors that affect the radiographic image.
7. Explain two different characteristic curve of Gamma and Latitude.
8. Discuss about absorption and conversion efficiency of screen.

**III. Short answers on:**

**(10 x 3 = 30)**

1. Function of fixer.
2. Safe light.
3. What is magnification?
4. Cassette pass box.
5. Write about laser camera.
6. X-ray viewing room and equipments.
7. Visual Acuity.
8. Mammography film.
9. What is normal developing time in manual and automatic processing?
10. Cleaning of automatic processor.

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**THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY**

**[AHS 0423]**

**APRIL 2023**

**Sub. Code: 1832**

**B.Sc. RADIOLOGY IMAGING TECHNOLOGY  
SECOND YEAR (Regulations 2010-2011 & 2014-2015 onwards)  
PAPER II – X-RAY FILM / IMAGE PROCESSING TECHNIQUES  
(INCLUDING DARK ROOM TECHNIQUES)  
*Q.P. Code: 801832***

**Time: Three hours**

**Answer ALL Questions**

**Maximum: 100 Marks**

**I. Elaborate on :**

**(3 x 10 = 30)**

1. Discuss in detail about Double Coated X-ray film.
2. Draw the cross section of Single Sided Emulsion Film and Explain.
3. Define Contrast and various factors that affect Contrast.

**II. Write notes on:**

**(8 x 5 = 40)**

1. Automatic Film Processor Related Artifacts.
2. Describe the Principles of Photo Stimulable Phosphor Imaging.
3. Constituents of Developer Solution and explain each.
4. Describe Safe light.
5. Describe Luminescence.
6. Screen – film Contact test.
7. Explain PACS and RIS.
8. Manual versus Automatic Film Processing.

**III. Short answers on:**

**(10 x 3 = 30)**

1. Darkroom Entrance.
2. Latent Image.
3. Define Sensitive Emulsion Layer.
4. What is Film Hopper?
5. Intensification factor.
6. Factors affecting Focal Spot Size.
7. Mammography Cassette.
8. Replenisher.
9. Curved Cassette.
10. IOPA film.

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