

DIPLOMA IN RADIOLOGY IMAGING TECHNOLOGY**FIRST YEAR****PAPER IV – X-RAY FILM / IMAGE PROCESSING TECHNIQUES***Q.P. Code : 841404***Time : Three Hours****Maximum : 100 marks****Answer ALL questions in the same order.****I. Elaborate on:**

Pages (Max.)	Time (Max.)	Marks (Max.)
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- | | | | |
|---|---|---------|----|
| 1. Describe the characteristics of an X- Ray film with diagrams. | 7 | 20 min. | 10 |
| 2. Describe the workflow on automatic film processor unit. | 7 | 20 min. | 10 |
| 3. What are the intensifying screens? What are the factors affecting the speed of screen? | 7 | 20 min. | 10 |

III. Write notes on:

- | | | | |
|---|---|--------|---|
| 1. What is film sharpness? What are the factors affecting film sharpness? | 4 | 9 min. | 5 |
| 2. What is image quality? Describe factors affecting image quality. | 4 | 9 min. | 5 |
| 3. What are the precautions used for storage of unexposed x-ray films? | 4 | 9 min. | 5 |
| 4. What is dark room illumination and safe light? | 4 | 9 min. | 5 |
| 5. Describe functions of accelerator and preservative in a developer solution. | 4 | 9 min. | 5 |
| 6. What is luminescence and what are its two effects? | 4 | 9 min. | 5 |
| 7. What are film hangers? Describe various types and uses of hanger? | 4 | 9 min. | 5 |
| 8. Describe the various processing faults. | 4 | 9 min. | 5 |
| 9. Describe the methods of film washing and drying. | 4 | 9 min. | 5 |
| 10. What are cassettes? What are the precautions taken in maintenance of cassettes? | 4 | 9 min. | 5 |

III. Short Answers on:

- | | | | |
|--|---|--------|---|
| 1. What is a screen type x-ray film? | 1 | 3 min. | 2 |
| 2. What is direct exposure type of x-ray films? Give two examples. | 1 | 3 min. | 2 |
| 3. How does the temperature and time affect the film development? | 1 | 3 min. | 2 |
| 4. Write short note on film fixing. | 1 | 3 min. | 2 |
| 5. What is latent image? | 1 | 3 min. | 2 |
| 6. What are blue sensitive films? | 1 | 3 min. | 2 |
| 7. What are the uses of dark room? | 1 | 3 min. | 2 |
| 8. What is film fog? | 1 | 3 min. | 2 |
| 9. What are rare earth metals? | 1 | 3 min. | 2 |
| 10. What are various sizes of double coated films available? | 1 | 3 min. | 2 |

DIPLOMA IN RADIOLOGY IMAGING TECHNOLOGY

FIRST YEAR

PAPER IV – X-RAY FILM / IMAGE PROCESSING TECHNIQUES

Q.P. Code : 841404

Time : Three Hours

Maximum : 100 marks

Answer ALL questions

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

1. What is film sharpness? What are the factors affecting film sharpness?
2. Draw cross sections of double coated and single coated X-ray films.
What are the advantages and disadvantages of double coated X-ray film?
3. What are the intensifying screens? What are the factors affecting the speed of screen?

II. Write notes on: **(10 x 5 = 50)**

1. What are the advantages and disadvantages of automatic film processors?
2. What is image quality? Describe factors affecting image quality.
3. What are the precautions used for storage of unexposed x-ray films?
4. What is dark room illumination and safe light?
5. Describe the characteristic curve of an x-ray film.
6. Describe functions of accelerator and preservative in a developer solution.
7. What are cassettes? Describe precautions in use of cassettes.
8. What is direct exposure type of x-ray films? What are the advantages of direct exposure type of x-ray film?
9. What are the various methods of film printing?
10. Write short note on film fixing.

III. Short Answers on: **(10 x 2 = 20)**

1. What is a screen type x-ray film?
2. What are rare earth metals?
3. Describe dental film.
4. What is the composition of a developer solution?
5. What is latent image?
6. What are the basic constituents of a fixer solution?
7. What is importance of pH in processing?
8. What is phosphorescence?
9. What are panchromatic films?
10. What are various types of film hangers.

DIPLOMA IN RADIOLOGY IMAGING TECHNOLOGY

FIRST YEAR

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Q.P. Code : 841404

Time : Three Hours

Maximum : 100 marks

Answer ALL questions

I. Elaborate on:

(3 x 10 = 30)

1. What is film sharpness? What are the factors affecting film sharpness?
2. Explain about the chemical constituents of fixer and developer
3. Draw a cross section diagram of an intensifying screen and list its functions.

II. Write notes on:

(10 x 5 = 50)

1. Explain about the single coated X ray films.
2. How to test for light leakage in X-ray cassettes
3. List the factors affecting the speed of screen.
4. The tests for timers.
5. Describe about the characteristic curve of the X-ray film
6. List the advantages and disadvantages of day light system.
7. Explain about modern image processing rooms.
8. Care of processing equipment in a manual processor.
9. Unsharpness in the radiographic image.
10. List the types of intensifying screens and give their advantages.

III. Short Answers on:

(10 x 2 = 20)

1. What is a cassette pass box?
2. Why is pH scale important in processing?
3. Examples of rare screen materials
4. What is a base and what is it made of?
5. Explain about dental film.
6. Explain about base fog.
7. What are panchromatic films.
8. Explain about replinisher.
9. Structure of single sided films.
10. What is safe light filter made up of?

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Q.P. Code : 841404

Time : Three Hours

Maximum : 100 marks

Answer ALL questions

I. Elaborate on:

(3 x 10 = 30)

1. (a) What are the general defects noted in the Radiograph?
(b) Discuss in detail about its causes.
2. Define Intensifying screens – types and Its advantages.
3. Write in detail on X-ray Film Processing.

II. Write notes on:

(10 x 5 = 50)

1. Write notes on Dental Film
2. Discuss about Day Light Processing.
3. Define the Density / Contrast of the X-ray film.
4. Handling of X- ray Film in Loading & Unloading.
5. Describe about Image processing mechanism.
6. Write about Developer / Fixer chemicals
7. Describe in detail about Film structure.
8. What are the criteria for a good Radiograph?
9. Discuss about Safelight.
10. Define construction of Cassette and its types.

III. Short Answers on:

(10 x 2 = 20)

1. What is Fluorescence?
2. Note down the Different speed of Films.
3. Discuss about Film pass box.
4. What is Latent Image?
5. Define Dry bench.
6. What is Film base?
7. Note down the Temperature of Developer & Fixer tanks.
8. Describe about Master tank.
9. What is mean by sharpness of X-ray ?
10. What is Film Fog?

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Time : Three Hours

Maximum : 100 marks

Answer ALL questions

I. Elaborate on:

(3 x 10 = 30)

1. (a) Write in detail about Film structure.
(b) Discuss about Types of Film and its Characteristics.
2. (a) Describe about Automatic processor and its advantages.
(b) Influence of Time and Temperature in Developing the Film.
3. (a) Discuss in detail about Dry bench and Wet bench.
(b) Describe about Film storage.

II. Write notes on:

(10 x 5 = 50)

1. Safe Light.
2. Fluorescence.
3. Developer.
4. Handling of Film.
5. Day Light systems.
6. Film Drier.
7. Cassettes.
8. Intensifying screens.
9. Dental Film.
10. Density and Contrast of X-ray Film.

III. Short Answers on:

(10 x 2 = 20)

1. Write down the contents of Fixer.
2. Write the Processing Time difference between Manual and Automatic.
3. What is Film fog?
4. What is the Temperature of a) Developer bath, b) Fixer Bath and c) Washing.
5. What is speed of X-ray film?
6. Write short notes on Film Pass Box.
7. What is mean by Glossy print?
8. What is the advantage of Preservative?
9. Mention the measurements of Conventional Dark room.
10. What is Latent Image?

[LH 0815]

AUGUST 2015

Sub. Code: 1404

DIPLOMA IN RADIOLOGY IMAGING TECHNOLOGY

FIRST YEAR

PAPER IV – X-RAY FILM/IMAGE PROCESSING TECHNIQUES

Q.P. Code : 841404

Time : Three Hours

Maximum : 100 marks

Answer ALL questions

I. Elaborate on:

(3 x 10 = 30)

1. What are the constituents of developer and explain in detail?
2. Draw and explain the cross sectional view of double side coated x-ray film.
3. Explain in detail, the construction of dark room with different types of entrances.

II. Write notes on:

(10 x 5 = 50)

1. Test for screen-film contact.
2. Artifacts in x-ray films.
3. Rare earth screens.
4. Care of intensifying screens.
5. Types of x-ray cassettes.
6. Test for light leakage.
7. Name the factors influencing image quality in film.
8. Draw and label the cross section of intensifying screen.
9. Gridded cassette.
10. Storage of unexposed films.

III. Short Answers on:

(10 x 2 = 20)

1. Dental films.
2. Fluorescence.
3. Pass box.
4. Processing faults.
5. Dichroic fog.
6. Latent image.
7. Non-screen films.
8. Squeegee rollers.
9. Hangers.
10. Curved cassettes.

[LI 0216]

FEBRUARY 2016

Sub. Code : 1404

DIPLOMA IN RADIOLOGY IMAGING TECHNOLOGY

FIRST YEAR

PAPER IV – X-RAY FILM/IMAGE PROCESSING TECHNIQUES

Q.P. Code : 841404

Time : Three hours

Maximum: 100 Marks

Answer **ALL** questions.

I. Elaborate on:

(3 x 10 = 30)

1. Describe in detail the cassette, its types and uses.
2. Films – their structure and types.
3. Automatic film processor and techniques.

II. Write notes on:

(10 x 5 = 50)

1. Fog.
2. Various methods of printing of images in radiology.
3. Sketch of a Dark room.
4. Characteristics of high speed screens.
5. Mammography film.
6. Laser camera.
7. Artifacts during fixing.
8. Developer used in film processing.
9. Characteristic curve.
10. Quality assurance of processor.

III. Short answers on:

(10 x 2 = 20)

1. Pass box in dark room.
2. Handling of x ray films.
3. Steps of manual film processing.
4. Phosphorus used in screens.
5. Dry film processing.
6. Influence of temperature on film processing.
7. Dental film.
8. Noise.
9. Steps of manual method.
10. Artifacts in automatic film processing.

[LJ 0816]

AUGUST 2016

Sub. Code : 1404

DIPLOMA IN RADIOLOGY IMAGING TECHNOLOGY

FIRST YEAR

PAPER IV – X-RAY FILM/IMAGE PROCESSING TECHNIQUES

Q.P. Code : 841404

Time : Three hours

Maximum: 100 Marks

Answer **ALL** questions.

I. Elaborate on:

(3 x 10 = 30)

1. Discuss in detail about X Ray Film Construction and Film Characteristics Curve.
2. Discuss in details about Automatic Film Processing.
3. Draw the cross section of Single Sided Emulsion Film and Explain.

II. Write notes on:

(10 x 5 = 50)

1. Rare Earth Screens.
2. Film Artifacts.
3. Uses of single coated X Ray Film.
4. Non- Screen film.
5. Formation of laser image.
6. Intensifying Screen.
7. Types of Cassettes.
8. How will you test for screen contact?
9. Day light printer.
10. Laser camera.

III. Short answers on:

(10 x 2 = 20)

1. Sodium thiosulphate.
2. Latent image.
3. Test for light leakage in Cassette.
4. Luminescence.
5. Film Storage of unexposed films.
6. Mammography film.
7. Cassette pass box.
8. Base Fog.
9. Processing Faults.
10. Halation.

[LK 0217]

FEBRUARY 2017

Sub. Code: 1404

**DIPLOMA IN RADIOLOGY IMAGING TECHNOLOGY
FIRST YEAR**

PAPER IV – X-RAY FILM/IMAGE PROCESSING TECHNIQUES

Q.P. Code : 841404

Time: Three Hours

Maximum: 100 Marks

Answer all questions

I. Elaborate on:

(3 x 10 = 30)

1. Describe about the layers of X-ray film and its role in image formation.
2. Construction of X-ray Image intensifier and Mechanism of action.
3. Automatic film processor.

II. Write notes on:

(10 x 5 = 50)

1. Image Contrast.
2. Factors determining image quality and discuss about radiographic mottle.
3. Construction of intensifying screens.
4. Discuss about the SPEED of intensifying screens and the factors increases the speed of screen.
5. Characteristic curve of X-ray film.
6. Types of X-ray films.
7. X-ray film artifacts.
8. Dark room illumination.
9. Construction of Laser imager and its advantages.
10. Name the various parts of Cassette and its use in production of radiographic image.

III. Short answers on:

(10 x 2 = 20)

1. Wide exposure Latitude.
2. Geometric unsharpness.
3. Line spread function.
4. Magnification of radiographic image.
5. Phantom image.
6. Intrinsic conversion efficiency and screen efficiency.
7. Resolving power of X-ray Film.
8. Rare earth intensifying screens.
9. Latent image center.
10. Minification and flux gain.

[LL 0817]

AUGUST 2017

Sub. Code: 1404

**DIPLOMA IN RADIOLOGY IMAGING TECHNOLOGY
FIRST YEAR**

PAPER IV – X-RAY FILM/IMAGE PROCESSING TECHNIQUES

Q.P. Code : 841404

Time: Three Hours

Maximum: 100 Marks

Answer all questions

I. Elaborate on:

(3 x 10 = 30)

1. What is Double coated X-ray film? Explain construction of Double coated X-ray film.
2. What are the constituents of developer solution? Describe each of them.
3. What is film sharpness? Explain the factors affecting the film sharpness.

II. Write notes on:

(10 x 5 = 50)

1. Describe the factors affecting the speed of Intensifying screen.
2. What are the types of X-ray cassette? Explain each of them?
3. Describe Halation and Irradiation with diagram.
4. How will storage the unexposed X-ray film in the department?
5. Describe the care and maintenance of Intensifying screen.
6. What is film artifact? Describe the various types of film artifact.
7. Describe the factors that alter and developing time.
8. Define Ultrasound and explain the principle of Ultrasound.
9. Define Computed Radiography and describe the principle of CR system.
10. Explain the test for safe light.

III. Short answers on:

(10 x 2 = 20)

1. What is Latent Image?
2. What are light sensitive materials?
3. Define Fluorescence.
4. Define Hatch box.
5. What is safe light?
6. What is Radiographic contrast?
7. Define pH scale.
8. What is Panchromatic film?
9. What is replenisher? Why it is used in the developer solution?
10. Define penumbra.

[LM 0218]

FEBRUARY 2018

Sub. Code: 1404

DIPLOMA IN RADIOLOGY IMAGING TECHNOLOGY

FIRST YEAR

PAPER IV – X-RAY FILM/IMAGE PROCESSING TECHNIQUES

Q.P. Code : 841404

Time: Three Hours

Maximum: 100 Marks

Answer all questions

I. Elaborate on:

(3 x 10 = 30)

1. What is Intensifying screen? Describe the factors affecting the speed of intensifying screen.
2. Define Dark room, describe about various types of dark room entrance with suitable diagrams.
3. What is film sharpness? What are the factors affecting film sharpness?

II. Write notes on:

(10 x 5 = 50)

1. Describe about single coated X-ray film with diagram.
2. What are the factors alter the developing time?
3. Describe about the computed Radiography system.
4. What are the darkroom illumination techniques? Explain each of them.
5. Describe about characteristics curve of X-ray film.
6. Define X-ray cassette, describe about various types of X-ray cassette.
7. How will you maintain and cleaning of automatic processor equipment?
8. Define Rinsing, washing and drying.
9. What is silver recovery? Describe any one methods of silver recovery.
10. What are the constituents of fixer solution? Explain its function.

III. Short answers on:

(10 x 2 = 20)

1. Define Fluorescence.
2. What is Gelatin?
3. What is anti-Halo backing?
4. Define silver halide crystals.
5. Define pH scale.
6. What is Film Hopper?
7. Define Squeeze Roller.
8. Define Radiographic contrast.
9. What is activator?
10. Define Dental film.

DIPLOMA IN RADIOLOGY IMAGING TECHNOLOGY
FIRST YEAR
PAPER IV – X-RAY FILM/IMAGE PROCESSING TECHNIQUES

Q.P. Code : 841404

Time: Three Hours

Maximum: 100 Marks

Answer all questions

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

1. Draw a cross section view of Intensifying screen and explain about its function.
2. Draw a diagram of dark room layout and explain the design of dark room.
3. What are the constituents of fixer solution and explain each of them?

II. Write notes on: **(10 x 5 = 50)**

1. What are the types of Intensifying screen? Explain each of them.
2. Define H.D. curve and describe about the characteristic curve.
3. What are the Dark room illuminations? Explain each of them.
4. What are factors affect the fixing time and clearing time?
5. What is computed radiography and describe about the principle of computed Radiography?
6. How will you give care for X-ray cassette?
7. What is film Hanger? Describe about various types of Hanger?
8. How will you test for light leakage cassette?
9. What are the differences between automatic and manual processing?
10. How will you store the unexposed X-ray film in the X-ray department?

III. Short answers on: **(10 x 2 = 20)**

1. Define Afterglow.
2. Write about dental X-ray film.
3. Define image sharpness.
4. What is Dichroic fog?
5. Describe on calcium tungstate.
6. What are the photosensitive materials?
7. What is Buffer solution?
8. Define X-ray Cassette.
9. What is Hardener? Where it is present?
10. Define Gadolinium Oxysulfide.

**DIPLOMA IN RADIOLOGY IMAGING TECHNOLOGY
FIRST YEAR
PAPER IV – X-RAY FILM/IMAGE PROCESSING TECHNIQUES**

Q.P. Code: 841404

Time: Three Hours

Maximum: 100 Marks

Answer all questions

I. Elaborate on:

(3 x 10 = 30)

1. Describe the workflow on automatic film processor unit.
2. Draw a cross section diagram of an intensifying screen and list its functions.
3. What are the constituents of developer and explain in detail?

II. Write notes on:

(10 x 5 = 50)

1. What is dark room illumination and safe light?
2. Describe the various processing faults.
3. What are factors affect the fixing time and clearing time?
4. How will you give care for X-ray cassettes?
5. List the factors affecting the speed of screen.
6. What are the criteria for a good Radiograph?
7. Artifacts in X-ray films.
8. Test for light leakage.
9. Mammography film.
10. Characteristic curve.

III. Short answers on:

(10 x 2 = 20)

1. Write short note on film fixing.
2. What are blue sensitive films?
3. What is Dichroic fog?
4. What is Buffer solution?
5. Explain about dental films.
6. What are panchromatic films?
7. Fluorescence.
8. Latent image.
9. Pass box in dark room.
10. Phosphorus used in screens.

**DIPLOMA IN RADIOLOGY IMAGING TECHNOLOGY
FIRST YEAR
PAPER IV – X-RAY FILM/IMAGE PROCESSING TECHNIQUES**

Q.P. Code: 841404

Time: Three Hours

Maximum: 100 Marks

Answer all questions

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

1. Explain about the chemical constituents of fixer and developer?
2. Explain in detail, the construction of dark room with different types of entrances.
3. Explain in detail about Films and their structure and types.

II. Write notes on: **(10 x 5 = 50)**

1. What are cassettes? What are the precautions taken in maintenance of cassettes?
2. What are the differences between automatic and manual processing?
3. List the advantages and disadvantages of day light system.
4. Unsharpness in the radiographic image.
5. Describe about image processing mechanism.
6. Discuss about safe light.
7. Rate earth screens.
8. Draw and label the cross section of intensifying screen.
9. Sketch of a Dark room.
10. Laser Camera.

III. Short answers on: **(10 x 2 = 20)**

1. What are rare earth metals?
2. Why is pH scale important in processing?
3. What is Hardner? Where it is present?
4. Explain about replenisher.
5. What is safe light filter made up of ?
6. Define Dry bench.
7. Non-screen films.
8. Curved cassettes.
9. Handling of x-ray films.
10. Dry film processing.
