

# Question Paper

Exam Date & Time: 05-Jan-2021 (02:30 PM - 04:30 PM)



## MANIPAL ACADEMY OF HIGHER EDUCATION

FIFTH SEMESTER B.Sc. MEDICAL IMAGING TECHNOLOGY DEGREE EXAMINATION - JANUARY 2021  
SUBJECT: BMIT 301 - IMAGING PHYSICS AND DARKROOM TECHNIQUES (PART I)  
(2016 SCHEME)

Marks: 50

Duration: 120 mins.

Answer all the questions.

- 1) Write in detail about the production of X-rays. (10)
- 2) Discuss briefly about the cassette construction and its ideal features. Write a note on types of cassette. (10)

3. Discuss the following

- 3A) Geometric unsharpness (5)
- 3B) Circuit breakers (5)
- 3C) Photo electric effect (5)
- 3D) Constant potential generator (5)

4. Discuss the following:

- 4A) Difference between Subject contrast and Subjective contrast (2)
- 4B) Optical density (2)
- 4C) Effective dose (2)
- 4D) P-N junction (2)
- 4E) Cardinal principle of radiation protection. (2)

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# Question Paper

Exam Date & Time: 07-Jan-2021 (02:30 PM - 04:30 PM)



## MANIPAL ACADEMY OF HIGHER EDUCATION

FIFTH SEMESTER B.Sc. MEDICAL IMAGING TECHNOLOGY DEGREE EXAMINATION - JANUARY 2021  
SUBJECT: BMIT 303 - RADIOLOGICAL PROCEDURES AND PATIENT CARE (PART I)  
(2016 SCHEME)

Marks: 50

Duration: 120 mins.

Answer all the questions.

Draw diagrams wherever necessary.

1. Explain in detail:

- |     |   |      |
|-----|---|------|
| 1A) | Anatomical Quadrants and regions of Abdomen . Add a note on Acute Abdomen Series. | (10) |
| 1B) | Various Techniques to demonstrate specific conditions in Barium Swallow.          | (10) |

2. Write short notes on the following:

- |     |  |     |
|-----|--|-----|
| 2A) | Siphon Test.   | (5) |
| 2B) | Radiographic views obtained to demonstrate Perthe's Disease. | (5) |
| 2C) | Radiographic positioning for Waters View.                    | (5) |
| 2D) | Norgaard's Method.   | (5) |

3. Discuss the following:

- |     |  |     |
|-----|--|-----|
| 3A) | Standard views for Single and double contrast barium meal.   | (2) |
| 3B) | Characteristics influencing Mucosal Coating of Bowel.        | (2) |
| 3C) | Complications of Hypotonic Duodenography.                    | (2) |
| 3D) | Indications and Patient Positioning for Chest Lordotic View. | (2) |
| 3E) | Patient Management for Extravasation of Contrast Media.      | (2) |

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# Question Paper

Exam Date & Time: 09-Jan-2021 (02:30 PM - 04:30 PM)



## MANIPAL ACADEMY OF HIGHER EDUCATION

FIFTH SEMESTER B.Sc. MEDICAL IMAGING TECHNOLOGY DEGREE EXAMINATION - JANUARY 2021  
SUBJECT: BMIT 305 - RECENT TRENDS IN ULTRASONOGRAPHY  
(2016 SCHEME)

Marks: 50

Duration: 120 mins.

Answer all the questions.

- |     |   |      |
|-----|---|------|
| 1)  | Explain ultrasound display modes                          | (10) |
| 2)  | Explain contrast media used in ultrasound imaging         | (10) |
| 3A) | Explain characteristics of ultrasound beam                | (5)  |
| 3B) | Explain types of Doppler                                  | (5)  |
| 3C) | Name the controls of Ultrasound and explain TGC in detail | (5)  |
| 3D) | Explain Scanning protocol for ultrasound abdomen          | (5)  |
| 4A) | Define transducer Q factor                                | (2)  |
| 4B) | Coupling agents used in ultrasound                        | (2)  |
| 4C) | Define Doppler shift                                      | (2)  |
| 4D) | Useful artifacts in ultrasound                            | (2)  |
| 4E) | Define Piezoelectric effect                               | (2)  |

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# Question Paper

Exam Date & Time: 11-Jan-2021 (02:30 PM - 04:30 PM)



## MANIPAL ACADEMY OF HIGHER EDUCATION

FIFTH SEMESTER B.Sc. MEDICAL IMAGING TECHNOLOGY DEGREE EXAMINATION - JANUARY 2021  
SUBJECT: BMIT 307 - RECENT TRENDS IN DIGITAL IMAGING  
(2016 SCHEME)

Marks: 50

Duration: 120 mins.

Answer all the questions.

- 1) Discuss in detail Photostimulable luminescence and its application in forming a latent image. (10)  
Explain briefly the formation of a digital image from the latent image.
- 2) Explain the various digital subtraction angiography techniques. Add a note on various methods to minimize misregistration and motion artifacts in subtracted image. (10)
- 3A) Short note on road mapping technique. (5)
- 3B) Image development in direct digital radiography. (5)
- 3C) Short note on various target materials used in mammography. (5)
- 3D) Radiographic room design for angiographic suite. (5)
- 4A) Indications for intra oral dental radiography. (2)
- 4B) Methods of forming a magnified image. (2)
- 4C) List out the various components of PACS. (2)
- 4D) Advantages of charged coupled devices. (2)
- 4E) Patient preparation for Mammography. (2)

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# Question Paper

Exam Date & Time: 13-Jan-2021 (02:30 PM - 04:30 PM)



## MANIPAL ACADEMY OF HIGHER EDUCATION

FIFTH SEMESTER B.Sc. MEDICAL IMAGING TECHNOLOGY DEGREE EXAMINATION - JANUARY 2021  
SUBJECT: BMIT 309 - RECENT TRENDS IN NUCLEAR MEDICINE TECHNOLOGY  
(2016 SCHEME)

Answer ALL questions.

Draw neat and labelled diagram as and when required.

Marks: 50

Duration: 120 mins.

- |     |  |      |
|-----|--|------|
| 1)  | Discuss the principle and working of a SPECT imaging device.                     | (10) |
| 2)  | Discuss in detail working of Dose calibrator                                     | (10) |
| 3A) | Write short note on different types of radioactive half life                     | (5)  |
| 3B) | Explain beta decay with the help of a diagram                                    | (5)  |
| 3C) | Write important properties of gamma, beta and alpha radiations?                  | (5)  |
| 3D) | Briefly explain at least one study that can be performed using I-131 and Tc-99m. | (5)  |
| 4A) | What are uses of $^{99m}\text{Tc-EC}$ ?  | (2)  |
| 4B) | What is radioactivity?   | (2)  |
| 4C) | What is transient equilibrium?   | (2)  |
| 4D) | What are assumptions of Bohr's atomic model?                                     | (2)  |
| 4E) | What is photopeak?   | (2)  |

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