

Question Paper

Exam Date & Time: 24-Aug-2019 (02:00 PM - 04:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

SIXTH SEMESTER B.Sc. MEDICAL IMAGING TECHNOLOGY DEGREE EXAMINATION - AUGUST 2019
SUBJECT: BMIT 302 - IMAGING PHYSICS AND DARKROOM TECHNIQUES (PART II)
(2016 SCHEME)

Saturday, August 24, 2019 (14.00 - 16.00)

Answer ALL questions.
Draw diagram wherever necessary.

Marks: 50

Duration: 120 mins.

Answer all the questions.

- 1) Explain in detail the Power Storage Generators and its applications. (10)
- 2) With the help of the Circuit diagram explain the X-ray Circuit in detail. (10)

- 3) Write short notes on:
 - 3A) Radiographic Image Artefacts (5)
 - 3B) COSHH Regulations (5)
 - 3C) Effect of Filters on Radiographic Image Quality and Patient Exposure (5)
 - 3D) Composition of Fixer Solution (5)

- 4) Explain the following:
 - 4A) Transmission Ratio in Grid (2)
 - 4B) Draw and label Coolidge's X-Ray tube (2)
 - 4C) Space Charge Compensation (2)
 - 4D) Hysteresis Loss (2)
 - 4E) Effects of Grids on Exposure Factors (2)

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Question Paper

Exam Date & Time: 26-Aug-2019 (02:00 PM - 04:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

SIXTH SEMESTER B.Sc. MEDICAL IMAGING TECHNOLOGY DEGREE EXAMINATION - AUGUST 2019
SUBJECT: BMIT 304 - RADIOLOGICAL PROCEDURES AND PATIENT CARE (PART II)
(2016 SCHEME)
Monday, August 26, 2019 (14.00 - 16.00)

Marks: 50

Duration: 120 mins.

Answer all the questions.

- 1) Explain the anatomy of salivary glands. Describe in detail the radiographic procedure to study the salivary glands. (10)
- 2) Explain the view taken to see the cervicothoracic junction. Add a note on anatomy of cervical Spine. (10)
- 3A) Explain procedure and filmings of Dacrocystography. (5)
- 3B) Explain the views taken for calcaneum. (5)
- 3C) Explain procedure and filmings of HSG. (5)
- 3D) Explain view taken to visualize the Intercondylar fossa. (5)
- 4A) Name the catheters used for different studies. (2)
- 4B) Air DC Enteroclysis (2)
- 4C) Indications and contraindications of FTR (2)
- 4D) Sigmoid Flush (2)
- 4E) Indications of Roberts method and folio method. (2)

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Question Paper

Exam Date & Time: 28-Aug-2019 (02:00 PM - 04:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

SIXTH SEMESTER B.Sc. MEDICAL IMAGING TECHNOLOGY DEGREE EXAMINATION - AUGUST 2019
SUBJECT: BMIT 306 - RECENT TRENDS IN COMPUTED TOMOGRAPHY
(2016 SCHEME)
Wednesday, August 28, 2019 (14.00 - 16.00)

Marks: 50

Duration: 120 mins.

Answer all the questions.

- | | | |
|-----|---|------|
| 1) | Discuss briefly CT image reconstruction algorithms. | (10) |
| 2) | Discuss briefly the factors affecting the patient's dose. | (10) |
| 3A) | Dual source x-ray tubes | (5) |
| 3B) | PACS | (5) |
| 3C) | Protocol for cerebral angiography | (5) |
| 3D) | Dental Scan | (5) |
| 4A) | Automatic tube modulation | (2) |
| 4B) | Effective dose | (2) |
| 4C) | Patient based artefacts | (2) |
| 4D) | Radiation protection in CT | (2) |
| 4E) | Isotropic Imaging | (2) |

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Question Paper

Exam Date & Time: 28-Aug-2019 (02:00 PM - 04:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

SIXTH SEMESTER B.Sc. MEDICAL IMAGING TECHNOLOGY DEGREE EXAMINATION - AUGUST 2019
SUBJECT: BMIT 306 - RECENT TRENDS IN COMPUTED TOMOGRAPHY
(2016 SCHEME)
Wednesday, August 28, 2019 (14.00 - 16.00)

Marks: 50

Duration: 120 mins.

Answer all the questions.

- | | | |
|-----|---|------|
| 1) | Discuss briefly CT image reconstruction algorithms. | (10) |
| 2) | Discuss briefly the factors affecting the patient's dose. | (10) |
| 3A) | Dual source x-ray tubes | (5) |
| 3B) | PACS | (5) |
| 3C) | Protocol for cerebral angiography | (5) |
| 3D) | Dental Scan | (5) |
| 4A) | Automatic tube modulation | (2) |
| 4B) | Effective dose | (2) |
| 4C) | Patient based artefacts | (2) |
| 4D) | Radiation protection in CT | (2) |
| 4E) | Isotropic Imaging | (2) |

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Question Paper

Exam Date & Time: 23-Aug-2019 (02:00 PM - 04:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

SIXTH SEMESTER B.Sc. MEDICAL IMAGING TECHNOLOGY DEGREE EXAMINATION - AUGUST 2019
SUBJECT: BMIT 308 - RECENT TRENDS IN MAGNETIC RESONANCE IMAGING
(2016 SCHEME)

Friday, August 23, 2019 (14.00 - 16.00)

Answer all the questions.

Draw suitable diagrams wherever required.

Marks: 50

Duration: 120 mins.

Major Questions:

- 1) Explain inversion recovery sequences. (10)
- 2) Explain contrast enhanced MRA technique and its clinical application. (10)

3) Short Answers:

- 3A) Explain different parameters for the acquisition of MR images. (4)
- 3B) Write a short note on K-space filling in MRI. (4)
- 3C) Define SNR. How selection and placement of coil affect SNR? (4)
- 3D) Write a short note on spatial pre-saturation. (4)
- 3E) Write a short note on techniques for spectroscopy. (4)

4) Very Short Answers:

- 4A) Define resonance. (2)
- 4B) Define flip angle. (2)
- 4C) List the parameters for T1 Weighting and T2 Weighting in Fast spin echo. (2)
- 4D) List the remedies for chemical shift artifact in MRI. (2)
- 4E) List any four types of RF coils. (2)

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Question Paper

Exam Date & Time: 27-Aug-2019 (02:00 PM - 05:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

SIXTH SEMESTER B.Sc. M.I.T./ B.Sc. M.L.T./ B.Sc. E.S.S. DEGREE EXAMINATION - AUGUST 2019
SUBJECT : BIOSTATISTICS/ BIostatistics & RESEARCH METHODOLOGY (STAT 402)
(2016 SCHEME)

Tuesday, August 27, 2019 (14.00 - 17.00)

Marks: 100

Duration: 180 mins.

1) **Briefly explain the following:**

- 1A) Ratio scale (2)
- 1B) Relative Frequency (2)
- 1C) General Fertility Rate (GFR) (2)
- 1D) Maternal Mortality Rate (MMR) (2)
- 1E) Ecological Fallacy (2)

2) **Write short notes on the following:**

- 2A) Measures of morbidity (5)
- 2B) Case report and case series (5)

3) **Differentiate between the following:**

- 3A) Qualitative variables vs Quantitative variables (5)
- 3B) Descriptive study designs vs Analytical study designs (5)

- 4) Explain any two sources of demographic data. (10)

5) Following data represent the blood cholesterol levels of 40 first-year students at a particular college.

213 174 193 196 220 183 194 200 192 200 200 199 178 183 188
193 187 181 193 205 196 211 202 213 216 206 195 191 171 194
184 191 221 212 221 204 204 191 183 227

- 5A) Report the value of the sample median together with the corresponding value of measure of dispersion. (8)
- 5B) Construct a grouped frequency table. (4)
- 5C) **Draw the graphs of:** (8)
i) Histogram
ii) Frequency Polygon
iii) Frequency Curve
(4+2+2 = 8 marks)

- 6) A random sample of 140 children had a mean urinary lead concentration of 2.15 $\mu\text{mol}/24\text{hr}$, with standard deviation 0.85. Construct reference range which includes 95% of the observations. (5)
- 7) The following is a sample of heights in cm of students in a class.
121, 119, 117, 121, 120, 120, 118, 124, 123, 139, 120, 115, 117, 121, 123, 120, 123
Report the value of coefficient of variation (5)
- 8) What is sampling? Enumerate any two reasons for sampling. (5)
- 9) Explain any three non-probability sampling techniques with their advantages and disadvantages. (12)
(6+6 = 12 marks)
- 10) 'Correlation does not imply causation'. Explain this statement with an example. (5)
- 11) Briefly explain the components of a research protocol. (8)

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