Reg. No.										

MANIPAL UNIVERSITY

SECOND YEAR M.Sc. M.I.T. DEGREE EXAMINATION – DECEMBER 2016

SUBJECT: ADVANCED TECHNIQUE AND INSTRUMENTATION OF MRI

(2012 SCHEME)

Friday, December 16, 2016

Time: 10:00 – 13:00 Hrs. Maximum Marks: 80

✍ **Answer ALL the questions.**

1. What is b – value? What b value should we choose to create optimal images? Explain T2 shine through in detail.

(20 marks)

2. **Short Note:**

2A. How is hydrogen spectroscopy performed on a clinical MR scanner, and what are the main metabolites detected.

2B. Write a note on Phase contrast MRI.

2C. Explain how you acquire a double echo imaging using fast spin echo with labeled diagram.

2D. Write a detail note on SAR. Are any unique biological effects noted in the 4.0T and higher experimental scanner?

2E. Explain magnetization transfer imaging in detail with labeled diagram.

2F. Write a note on Chemical shift artifact.

(10 marks × 6 = 60 marks)

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MANIPAL UNIVERSITY

SECOND YEAR M.Sc. M.I.T. DEGREE EXAMINATION – DECEMBER 2016

SUBJECT: RADIATION EVALUATION & PROTECTION IN DIAGNOSTIC RADIOLOGY

(2012 SCHEME)

Tuesday, December 20, 2016

Time: 10:00 – 13:00 Hrs. Maximum Marks: 80

✍ **Answer ALL the questions:**

✍ **Major question:**

1. Describe Acute Radiation Syndrome (ARS) along with major response stages involved in it. Add a note on forms of ARS.

(20 marks)

2. **Write short notes on:**

2A. Cellular effects of irradiation
2B. k edge filters
2C. Need for immobilization and different immobilization devices
2D. X ray room design according to AERB guidelines
2E. Compare and contrast TLD and optically stimulated luminescence dosimeter
2F. Basic radiation units and quantities

(10 marks × 6 = 60 marks)

Reg. No.										

MANIPAL UNIVERSITY

SECOND YEAR M.Sc. M.I.T. DEGREE EXAMINATION – DECEMBER 2016

SUBJECT: NUCLEAR MEDICINE IMAGING TECHNIQUE

(2012 SCHEME)

Wednesday, December 21, 2016

Time: 10:00 – 13:00 Hrs. Maximum Marks: 80

✍ **Answer ALL questions:**

1. Discuss briefly the departmental staffing and planning in nuclear medicine.

(20 marks)

2. **Write short notes on:**

2A. Handling of radio-active waste
2B. Scintillation detector
2C. Reconstruction technique in SPECT
2D. Half-life and mean-life of radio-isotopes
2E. Myocardial Imaging
2F. Radionuclide generator

(10 marks × 6 = 60 marks)