Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

A Constituent Institution of Manipal University

VI SEMESTER B.Tech.(BME) DEGREE END SEM EXAMINATIONS, APRIL 2018

SUBJECT: BASIC CLINICAL SCIENCES III (BME 3201)
(REVISED CREDIT SYSTEM)
Monday, 16th April, 2018 : 2 to 5 pm

TIME: 3 HOURS **MAX. MARKS: 100**

Instructions to Candidates:

1. **Answer ALL questions from PART-A, PART-B and PART-C. Use separate answer books for PART-A, PART-B and PART-C.**
2. **Draw labeled diagram wherever necessary.**

PART- A. RADIOLOGY (Max. Marks 30)

Q1) **Answer the following with respect to digital Radiography.** 5+5

(a) Describe the principles and workflow behind computed radiography with its advantages

(b) Describe the principles of direct and indirect digital radiography with their advantages

Q2) **Answer the following with respect to the devices improving the radiographic Quality.** 3+7

(a) Name the devices which are useful to improve the radiographic quality with respect to (i) Field size (ii) KVp (iii) Part thickness.

(b) Define grids. Describe their mechanism of improving the radiographic quality. Explain Grid ratio, Grid frequency and Grid Material.

Q3) **Answer the following with respect to ultrasound physics.** 4+4+2

(a) Describe the principles of Ultrasound with its interactions with matter.

(b) Describe mechanics of ultrasound transducer (draw diagram). Describe Curie temperature.

(c) What is Q factor? Explain its importance.

PART- B. RADIOTHERAPY. (Max. Marks 40)

Q1)	(a) What are the four R's of radiobiology? (b) Describe any 2 of them in detail.	4+6
Q2)	(a) Expand and define LET,RBE and OER. (b) Draw a graphical representation of LET,OER and RBE.	6+4
Q3)	(a) Describe the Mechanism of Action of Radiation on DNA. (b) Write a note on Mammalian Survival Curves.	5+5
Q4)	What is an ideal Brachytherapy source? Write briefly about any two commonly used brachytherapy source.	10

PART-C. NEUROLOGY (Max. Marks 30)

Q1)	Write a short note on cranial nerves and its functions.	10
Q2)	Write short notes on Nerve Conduction Studies.	10
Q3)	Describe visual evoked potentials – technique and uses.	10