Reg. No.										

Manipal Institute of Technology, Manipal

(A Constituent Institute of Manipal University)

FIRST SEMESTER M.TECH (ASTRONOMY & SPACE ENGINEERING)

END SEMESTER EXAMINATIONS, NOV/DEC 2015

SUBJECT: FUNDAMENTALS OF SPACE SCIENCE [ICE 507]

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

- Answer **ANY FIVE FULL** questions.
- Missing data may be suitably assumed.

1A.	Illustrate the celestial coordinate system with a neat diagram.	**3**
1B.	Explain the different time systems employed in astronomy.	**3**
1C.	Briefly explain the different planetary properties.	**4**
2A.	Describe the steps involved in the evolution of earth's atmosphere.	**4**
2B.	Briefly explain about asteroids and the asteroid belt.	**3**
2C.	A satellite in a circular orbit at an altitude 'h' of 230 km above earth's surface has a period 'T' of 89 minutes. What mass of earth follows this data?	**3**
3A.	What is Jeans limit? Obtain an expression for the critical mass.	**4**
3B.	Briefly explain the natural and artificial sources of radiation and their effects.	**3**
3C.	Explain the different types of scattering phenomena.	**3**
4A.	Explain the importance of radiation shielding and the different methods of radiation shielding.	**3**
4B.	Explain the equation of radiative transfer with appropriate definition of the terms.	**3**
4C.	Explain the phases in the evolution of a supernova remnant.	**4**
5A.	Describe the physical state of a gas within a star with appropriate equations.	**4**
5B.	Explain the stellar properties.	**3**
5C.	Illustrate the CNO cycle with appropriate steps.	**3**
6A.	Classify galaxies according to their structure.	**4**
6B.	Describe briefly the solar atmosphere.	**3**
6C.	How are the sunspots formed? Explain their importance in the solar cycle.	**3**