Reg. No.

MANIPAL INSTITUTE OF TECHNOLOGY
MANIPAL
A constituent unit of MAHE, Manipal

VII SEMESTER B.TECH. (BIOTECHNOLOGY)
END SEMESTER EXAMINATIONS, Nov/Dec 2018

SUBJECT: DRUG DELIVERY: ENGINEERING PRINCIPLES [BIO 4011]

REVISED CREDIT SYSTEM

Time: 3 Hours   MAX. MARKS: 50

Instructions to Candidates:
- ❖ Answer **ALL** the questions.
- ❖ Missing data may be suitable assumed.

1A.	What are the difficulties in developing the therapeutic use of nerve growth factor (NGF) containing drug?	3
1B.	Briefly explain the role of biocompatible polymers in the design of drug delivery systems	3
1C.	Write a short note on proliferation of drug targets.	2
1D.	Why we need to study the dispersion and diffusion of drug in water and justify it.	2
2A.	Derive the root mean square velocity of particle based on Einstein principle on the random movement of individual molecules.	3
2B.	What are the important characteristics about diffusion process we can make by assuming particles move randomly?	2
2C.	Briefly explain the diffusion of proteins and nucleic acids in water and methods used to calculate diffusion coefficient.	5
3A.	Define action potential and explain the mechanism of cell signalling process?	4
3B.	What do you understand the role of capillaries in tumor growth and explain the governing factors?	3
3C.	Write a short note on characteristics of different membrane transport mechanisms.	3
4A.	Explain photo bleaching technique to prove the mobility of proteins and lipids in plasma membrane?	5
4B.	Why solubility of drug in aqueous phase is important for certain drugs? With example, explain how drug modification will help in solubility	5
5A.	Explain the difference between reservoir delivery system and matrix delivery system with proper example	3
5B.	Explain how nanomedicine helps in treating cancer	3
5C.	Treating diseases related to posterior part of the eye is difficult. How nanomedicine is helping to treat these diseases? Explain with proper example	4