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

SEMESTER B.TECH./M.TECH END SEMESTER EXAMINATIONS

NOVEMBER/DECEMBER 2019

SUBJECT: DRUG DELIVERY: ENGINEERING PRINCIPLES [BIO 4011]

Date of Exam: **26/11/2019** Time of Exam: 3 hours Max. Marks: **50**

Instructions to Candidates:

- Answer ALL the questions & missing data may be suitable assumed

1A.	mention different routes of drug administration with advantages and disadvantages	**7**
1B.	Elucidate with proper equation and graph how Diffusion coefficient is estimated by fluorescence microscopy	**3**
2A.	Explain with proper example how the solubility and stability of drug can be enhanced by covalent and non-covalent modification	**7**
2B.	Biotransformation occur in few organs. Explain in detail with proper example	**3**
3A.	Explain how different drugs permeates through plasma membrane with proper example	**6**
3B.	Elucidate about receptor mediated endocytosis and how it is used for drug delivery	**4**
4A.	Differentiate between bulk eroding and surface eroding polymers with examples and how they are used in drug delivery	**5**
4B.	Elucidate what is EPR effect and how it is used in cancer drug delivery using proper example	**5**
5A.	Why treating neuro-inflammation is essential and also very difficult and how recent drug delivery systems are helping in treating neuro-inflammation?	**5**
5B.	Why insulin delivery is always a challenging research topic and explain recent development in insulin delivery	**5**