MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

A Constituent Institution of Manipal University

VII SEMESTER B.TECH. EXTERNAL EXAMINATIONS NOVEMBER 2018

END SEMESTER EXAM

SUBJECT: METABOLIC ENGINEERING [BIO 4007]

Date of Exam: **29/11/2018** Time of Exam: **2.00 PM – 5.00 PM** Max. Marks: **50**

Instructions to Candidates:

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

1A.	Discuss about the catabolite repression in *E.Coli* when both glucose and lactose are present. And the influences of cAMP molecules on catabolite repression.	**6**
1B.	What is energy charge? How it is calculated? Mention the significance of energy charge on metabolic activities.	**4**
2A.	Glucose enters into the cytosol of cell where it has many enzymes leading to conversion of lactic acid. Elaborate on the regulation of metabolic pathway involved during its conversion.	**5**
2B.	How does feedback regulation and isozyme control improves the production of primary metabolites?	**5**
3A.	What are idiolites? How they are produced? Illustrate a strategy for improving the production.	**6**
3B.	Define strain degeneration. Mention its significance in secondary metabolism.	**4**
4A.	Explain the methods used for bioconversion of waste material into an useful products.	**4**
4B.	What are the pretreatment techniques available for lignocellulose biomass conversion? Discuss in detail about the techniques.	**6**
5A.	Define mutation and various modes of generating mutations in improving industrial biotechnology of an organism.	**6**
5B.	How genetic engineering can help in the research and development of new metabolic pathways?	**4**