

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATION- May2018

B.Tech X<sup>Th</sup> Semester/ M.Tech. II Semester/Ph.D.

COURSE CODE: 10M11BT215

MAX. MARKS: 35

COURSE NAME: Metabolic engineering

COURSE CREDITS: 03

MAX. TIME: 2 HR

*Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.*

- Q1 (i). Give two examples of non-heterocyclic and heterocyclic alkaloids? (1 mark)
- (ii) Define the role of catalytic efficiency in an enzyme controlled reaction. (1 mark)
- (iii). Name the bacterium which may be utilized for biosynthesis of lysine. (1 mark)
- (iv). Define metabolic grid. (1 mark)
- (v). what do you understand by the 'auxotrophy'? (1 mark)
- Q2a Differentiate between broad spectrum and narrow spectrum antibiotics? (3 marks)
- b) Explain the strategy for influencing/enhancing antibiotic productivity (3 marks)
- Q3. a) Differentiate between stable isotopes vs radioisotopes. (3 marks)
- b) Explain the different pathways for the synthesis of terpenes. (4 marks)
- Q4. Discuss the role of allosteric enzymes in regulation of a metabolic pathway with suitable example. (5 marks)
- Q5. Explain the following terms in brief (12 mark)
- a) Flux balance analysis
- b) Strategy for proteomic characterization of enzymes of a metabolic pathway
- c) Applications of <sup>13</sup>C Labeling