Department of Biochemical Engineering & Biotechnology

BBL431 (Bioprocess Technology)

Minor Test 2

Mar 25, 2017
11.00- 12.00 hrs
Venue: LH-310
Maximum Marks-20

Note: Answer one question at one place. Do not over-write.

Q.1. (a). How is the activity of the following enzymes affected during idiophase of *Aspergillus niger* when production and secretion of citric acid takes place in glucose containing medium :

(i) citrate synthase
(ii) aconitase
(iii) isocitrate dehydrogenase (3)

(b). Write the complete anaplerotic (or "replenishing") reaction with its substrate and enzyme that takes place in *A. niger* during production of citric acid in a medium containing glucose as the carbon source. (2)

Q.2. Why is baker's yeast produced by employing a fed-batch process? (2)

Q.3. (a). What properties would you look for in the microorganism and the enzyme that can be used for production of glucose isomerase. (2)

(b). Write the main steps employed in industrial production of HFCS-42 from glucose by using glucose isomerase. (2)

Q.4. (a). Write the names and functions of cellulose-hydrolyzing enzymes, required to hydrolyze cellulose completely into glucose. (3)

(b). Ten grams of lignocellulosic residue (such as wheat straw; composition: cellulose-40%, hemicellulose-30% and lignin-25%) contained in 100 ml of citrate buffer was hydrolyzed by cellulase enzyme (having all three components) for 48 hours. The reaction mixture was found to contain three grams of glucose at the end of the reaction. What will be the amount of "percent cellulose hydrolyzed" ? (2)

Q.5. (a). Write any four important properties of alkaline proteases which are required for using it along with a detergent for washing under bleaching environment. (2)

(b). How was subtilisin (an alkaline protease) made resistant to bleaching agents? (2)