

**KERALA AGRICULTURAL UNIVERSITY**  
**B.Tech (Food. Engg) 2012 Admission**  
**III<sup>rd</sup> Semester Final Examination- December /January -2013**

**Cat. No: Fdqu.2103**  
**Title: Biochemical Engineering (1+1)**

**Marks: 80**  
**Time: 3 hours**

I Answer the following

(10x 1= 10)

1. Write general steady state mass balance equation.
2. Newtonian fluids are fluids which obey \_\_\_\_\_ law.
3. \_\_\_\_\_ is the compound which gives strength to plant tissues.
4. \_\_\_\_\_ are the building blocks of proteins.
5. Write names of two reactors for immobilized enzyme systems.
6. What is active site of an enzyme?
7. What is cofactor?
8. What is ATP?
9. Which are the main components of eukaryotic cell?
10. What is anabolism?

II Answer any 10 questions

(10x3 = 30)

1. Define molecular diffusion.
2. What is Michealis Menten equation?
3. Which are nitrogen bases found in RNA and DNA?
4. Which are the different types of carbohydrates?
5. Discuss about polysaccharides.
6. What is electrophoresis?
7. Enumerate characteristic properties of proteins.
8. Write the design equation for a batch reactor.
9. Define space time and space velocity.
10. What is activation energy?
11. Describe the function of mitochondria in a cell
12. What are nutritional requirements of organism?

III Answer any 6 questions

(6x5=30)

1. Explain growth curve of cells in a batch process.
2. What are the advantages of immobilization?
3. Write a short note on (I) DNA (II) RNA.
4. How air is sterilized?
5. What are the factors affecting the rheology of fermentation froth?
6. Explain the types of agitators used for mixing.
7. Explain the method for measuring  $k_L a$ .
8. Explain film theory in mass transfer.

IV Answer any one

(1x10=10)

1. Explain gas-liquid mass transfer and derive an expression for overall mass transfer coefficient.
2. Explain batch and continuous heat sterilization of liquids.