



University of Technology  
Department of Applied Sciences  
Final Examination 2016/2017



**Subject: Bioreactors**

**Class: 4th year**

**Branch: biotechnology**

**Examiner: Assist. Prof. Dr. Amal A. Hussein**

**Time: 3 hours**

**Date: 1/6/2017**

**Note: Answer Four questions (Each question 25 marks)**

Q1: A. What are the structural component of the fermenter aeration and agitation?

B. What is the relation between  $D$  and  $\mu$  in continuous culture?

Q2: A. Mention the advantage of solid state fermentation.

B. Draw the foam sensing and control?

Q3: What are the difference between:

1- Chemostate and turbidostate culture.

2- Fermenter and bioreactor.

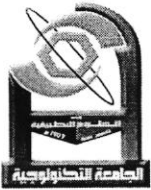
Q4: Answer the following:

1- How we can production SCP.

2- What are the characteristics of semiconteneous culture?

Q5: If we start with a bacterial culture of  $10^3$  cells per ml and if the doubling time  $td$  is 1.5 h, calculate the final cell concentration (cells/ml) after 18 h.

Good luck



University of Technology  
Department of Applied Sciences  
Final Examination 2011/2012



Subject : enzyme biotechnology  
Branch : Biotechnology  
Examiner : Dr. Entesar H. Ali

Class : 4th year  
Time : 1.5 hours  
Date : 2016- 2017

ANSWER ONLY ( 4 ) QUESTIONS

Q1 (13)

A- What are the tests performed on the enzyme after each step of the extraction of crude extract purification? (5)

B- Why do we have to be careful in the purification of protease ? (3)

C- What do we mean <sup>TLC</sup> inducible enzyme ? (5)

Q2 (12)

A- Why purification enzyme ? (4)

B- Compared between mechanical lysis method and Agitation with Abrasives?(4)

C- What do we mean autolysis ? (4)

Q3 (13)

A- Why used toluene ? (5)

B- What the ways that control in activity of enzyme? (5)

C- What do we mean enthalpy? (3)

Q4 (12)

A- What the characters of co-enzyme ? (4)

B- Compared between reversible and irreversible denaturation ? (4)

C- What do we mean entropy ? (4)

Q5 (12)

A- If  $V_0 2 \times 10^{-3}$ , conc. of substrate  $S_0 5 \times 10^{-2}$ ,  $E_0 2 \times 10^{-6}$ ,  $K_m 1 \times 10^{-4}$  Calculate follows  $V_{max}$ ,  $K_{cat}$ ,  $K_2$ ,  $K_m$  in  $E 9 \times 10^{-2}$ ,  $V_{max}$  in  $E 9 \times 10^{-2}$  (6)

B- Draw a plan that shows the order of reaction ? (6)

  
Dr. Entesar H. Ali



University of Technology  
Department of Applied Sciences  
Final Exam. 2016-2017



Subject : Tissue Culture Techniques  
Division : Biotechnology  
Examiner : Prof. Dr. Ghassan M. Sulaiman

Class : <sup>4</sup>3 year  
Time : 3 hours  
Date :

**Note: Answer 5 Questions of the Following (10 marks of each)**

Q1:- Give the facts of one of the following misconceptions?

1. Pregnancy, fetuses or babies are aborted or harmed in stem cell research.
2. A clone is grown in a lab without an embryo or born from a mother and is the same age and personality as you, and has no belly button.

Q2: Mention the steps to clone sheep from blastocyst? Explain your answer by drawing. Then mention the Pros. and Cons. of cloning?

Q3: How do the newly formed tumorous cells survive?

Q4: Which protein is activated by Cdk-Cyclin complex? Explain your answer with diagram.

Q5: What the major criteria employed in viability assay and give the advantages of colorimetric assay?

Q6: What are the enzymes used for tissue disaggregation? then give the advantages and disadvantages of each.

**Good Luck**