BITS Pilani, Dubai Campus
Dubai International Academic City
Second Semester 2010- 2011
Compre (Closed Book)

Course No.: BIOT C461 **26.05.11** **Maximum Marks: 40**
Course Title: Recombinant DNA technology **Time: 12:30pm- 3:30pm**

Attempt all the questions in the given sequence

Q1a. What are the techniques involved in Gene manipulation? List the criteria for efficient gene manipulation. [1.5]
b. Explain the principle and working of the TaqMan system in real time quantitative PCR. [3]
c. Diagrammatically explain the Nested PCR. [2]
d. What are the three site specific methylases present in *E.coli*? [1.5]
e. What is homopolymer tailing? Give its significance. [2]

Q2a. Differentiate between [3]
i. Conjugative and non conjugative plasmids.
ii. Insertional vector and replacement vectors of lambda phage
b. What are the drawbacks of BAC and PAC vectors? [2]
c. How can we use purification tags to recover the cloned gene products? [3]
d. Explain the improved method for cDNA cloning. [2]

Q3a. What is Immunological screening? How is it used to screen genomic and cDNA libraries? [2]
b. Explain: [4]
i. Pyrosequencing
ii. Capillary array electrophoresis
c. Explain the chemical mediated transfection methods used to transform animal cells. [4]

Q4a. What are the properties conferred to a healthy plant due to *Agrobacterium* infection? [1.5]
b. Why animals are preferred models for transgenic technology? [2]
c. What are the advantages of using *Saccharomyces* over *E.coli* for expression of recombinant proteins? [2]
d. Explain the principle underlying the hybridoma technology for production of monoclonal antibodies. [3]
e. Differentiate between T-helper cells and T-cytotoxic cells. [1.5]

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Test 2 (Open Book)

Course: Recombinant DNA technology BIOT C461

Date: 8.05.2011 Time 8:00pm – 8.50 am Total marks: 20 (weightage: 20%)

Note: Only the **prescribed text book** and **hand written notes** are allowed.

Q1a. What is meant by protoplast fusion? How is it achieved? [3]

b. What are the differences and similarities between the gene transfer strategies used for animal and plant cells? [4]

c. Explain the roles of different genes grouped in the *vir* operon of the Ti plasmid. [3]

Q2a. Describe the different methods of direct DNA transfer in plant cells. [2]

b. What is transgenic technology? Why is it necessary to necessary to control transgene expression precisely? [2]

c. How is the embryonic stem cell transfer achieved? [4]

d. How can we inactivate the gene without directly modifying the target gene? [2]

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BITS Pilani, Dubai Campus
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Second Semester 2010- 2011
Test 1 (closed book)

Course No.: BIOT C461 **27.02.11** **Maximum Marks: 25**
Course Title: Recombinant DNA technology **Maximum Time: 50 minutes**

Attempt all the questions in the given sequence

1a. Mutations in RepA protein can lead to increase in copy number of the plasmid. Justify. [2]

b. What is meant by Plasmid incompatibility? How can the incompatibility group of the plasmids be changed? [4]

2a. Diagrammatically explain the in vitro packaging of cancatemerized phage Lambda in a mixed lysate. [4]

b. Explain the plaque lift method for screening the recombinants. [3]

3a. Mention the advantages of vectors with ss-DNA genome. [2]

b. Vectors with strong promoters are advantageous as well as disadvantageous. Justify. [4]

4a. Why is PCR not suited for amplification of large DNA fragments? [2]

b. Explain the Maniatis strategy for producing a representative gene library. [4]

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Set A

BITS Pilani, Dubai Campus
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Second Semester 2010- 2011

Quiz 2

Course: Recombinant DNA technology BIOT C461

Date: 13.04.2011 Total marks: 7 (weightage: 7%)

Name:_____ ID No._____

1. How would you justify the inability to detect cloned genes in new bacterial hosts? [1]

2. Give two examples of natural plasmids modified to be used in a broad host range. [2]

3. Why do Gram positive organisms lack a universal cloning vehicle? [1]

4. What is transient transfection? [1]

5. Give examples of two endogenous selectable markers present in the cellular genome. [1]

6. Mention the advantages of adenovirus as animal vectors. [1]

Set A

BITS-Pilani, Dubai Campus
Dubai International Academic City
Second Semester 2010- 2011
Quiz 1 (closed book)
Course: Recombinant DNA technology BIOT C461

Date: 9.03.2011 Time 1:15pm – 1.35 pm Total marks: 8 (weightage: 8%)

Name:_____ ID No._____

Q1. Explain the term Electrophoretic blotting. [1Mark]

Q2. What are liposomes? Give its significance. [2Marks]

Q3. Give the principle of Pulse field gel electrophoresis. [2Marks]

Q4. What are Isoschizomers? [1Mark]

Q5. Give the significance of the enzyme alkaline phosphatase. [1Mark]

Q6. What are adaptor molecules? [1Mark]