BITS, Pilani- Dubai
Dubai International Academic City
Second Semester 2009- 2010

Comprehensive Exam 2009-2010
Course: Recombinant DNA Technology BIOT C461
Date: 26.05.2010 Time 10:00am – 1.00 pm Total marks: 40 (Weightage: 40%)

Note: *Please answer all the questions in the given sequence*

Q1a. Explain the RAGE strategy for inactivating the transgene. [3Marks]

b. Why are plants preferred over animals for production of recombinant protein? [2Marks]

c. What is meant by plasmid incompatibility? [2Marks]

d. What is capillary array electrophoresis? [2Marks]

Q2a. What are the disadvantages of *S.cerevisiae* system for production of recombinant proteins? [2Marks]

b. Write a short note on Nested PCR, with a neat labeled diagram. [4Marks]

c. Give two examples of the restriction enzymes from different organisms and mention their source organisms. [4Marks]

Q3a. How can we perform transformation of plasmid in *E.coli* cells? [4Mark]

b. Vectors with controllable promoters are advantageous than strong promoters. Justify. [4Marks]

c. Write a short note on bacterial gene delivery in plants. [3Marks]

Q4a. Diagrammatically explain the early cDNA cloning strategy, involving hairpin-primed second-strand DNA synthesis. [4Marks]

b. How is cloning achieved in *Streptomyces*? [3Marks]

c. Write a note on ultrasound mediated gene delivery in animal cells. [3Marks]

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Test 2 (OpenBook)

Course: Recombinant DNA technology BIOT C461

Date: 9.05.2010 Time 8:00pm – 8.50 am Total marks: 20 (weightage: 20%)

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

Q1. Explain the mechanism of DNA uptake in the gonnorhea causing bacterium, with a neat labeled diagram. [5Marks]

Q2. Suggest a method of cloning the adjacent sequences an integrative vector carrying a gene of *Bacillus* into a plasmid containing a homologous region, using selective pressure. [3Marks]

Q3a. Explain the principle behind the use of HAT medium in selection of TK positive cell lines. [3Marks]

Q3b. What is meant by somaclonal variations? [2Marks]

Q4a. What is meant by formation of somatic hybrids? [2Marks]

Q4b. Describe the properties conferred to a healthy plant by an *Agrobacterium* infection. [3Marks]

Q4c. Give the structures of histopine and Nopaline. [2Marks]

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Test 1 (Closed Book)

Course: Recombinant DNA technology BIOT C461

Date: 28.03.2010 Time 8:00pm – 8.50 am Total marks: 25 (weightage: 25%)

Q1. What is the significance of the restriction systems in organisms? [2Marks]

Q2. Explain the regulation of the copy number of plasmids by the antisense RNA mechanism. [4Marks]

Q3. Why are the BAC and PAC vectors of choice for human genome project? [3Marks]

Q4. Diagrammatically explain the blunt end ligation. [4Marks]

Q5. What is the significance of single stranded vectors? [2Marks]

Q6. How is the in vitro packaging of phage DNA achieved? [4Marks]

Q7. Give example of a modern cosmid and state its advantages. [4Marks]

Q8. Give any two examples of purification tags used for purification of cloned gene product. [2Marks]

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Quiz 2 (closed book) Set A

Course: Recombinant DNA technology BIOT C461

Date: 12.04.2010 Time 12:05pm – 12.25 pm Total marks: 7 (weightage: 7%)

Q1. What do you mean by Spi$^-$ selection of phage? [1Mark]

Q2. Why is PCR suited for amplification of short DNA fragments? [1Mark]

Q3. What is colony hybridization? [2Mark]

Q4. List the advantages of immunological screening. [1Marks]

Q5. List the advantages of capillary array over gel slabs. [1Mark]

Q6. What is meant by pyrosequencing? [1Mark]

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Quiz 1 (closed book) Set A

Course: Recombinant DNA technology BIOT C461

Date: 22.02.2010 Time 12:05pm – 12.25 pm Total marks: 8 (weightage: 8%)

1. Define Gene Manipulation. [1Mark]

2. Give two examples of products commercially prepared using Recombinant DNA technology. [1Mark]

3. List the techniques involved in Gene manipulation. [1Mark]

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

5. What is lipofection? [1Mark]

6. What is real time PCR? [2Marks]