

BBL733/BEL 711 Recombinant DNA Technology
Minor I, 1st semester 2016-17

Time: 1 hr

Max Marks: 20

- 1 a) Describe situations where cutting with a restriction enzyme (RE) would generate a 5' or a 3' overhang. 2
b) It is possible to create a new RE site within DNA molecules. Describe one strategy. 1
c) It is proposed that the RE's have an important role to play in terms of maintaining species identity. What exactly does this mean? 2
2. a) Distinct events occur between DNA and restriction enzymes during cognate and non-cognate binding. List 4 such differences. 2
b) What is the role of PD...D/ExK motif in catalytic activity of RE's? Also, describe the catalytic mechanism involved in breaking the phosphodiester bond. 2
3. a) DNA Polymerase I from *Escherichia coli* has three important catalytic properties. List down these and for which reactions can you use them in the lab. 2
b) Is there any enzyme that can polymerize deoxyribonucleotides without the need for a template and where may it find applications? 2
4. a) What is a plasmid replicon and how is it different from origin of replication? 1
b) Which DNA sequences on the plasmid vector determine strong expression of heterologous proteins? 2
c) The use of bacteriophage lambda as a vector was heavily dependent on modifying the native DNA in a way that restriction enzyme sites are limited. How was this achieved? 2
5. From what you have learned till now in the class, describe an interesting idea and the method you would use to execute it? 2

