

2056
B.E. (Biotechnology) Sixth Semester
BIO-611: Recombinant DNA Technology

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Section.

x-x-x

1. Attempt the following:-

- i. What is the importance of multiple cloning sites in a plasmid.
- ii. Why is alkaline reagent is used in the isolation of plasmids.
- iii. What is *Taq* polymerase, what is its use.
- iv. What are Opines, where are these present.
- v. What is an linker, why is it used.
- vi. What is a cDNA, which enzyme synthesizes it.
- vii. What is FISH in recombinant DNA technology, what is its importance.
- viii. How a cloning vector different from expression vector.
- ix. What is a probe, why is it used.
- x. What is a shuttle vector, give at least one example. (1x10=10)

Section-A

- 2a) Discuss in detail the methodology for isolation and purification of Plasmid DNA from bacterial cell.
- b) How lambda phage vectors are generated, discuss different types of Lambda phage vectors. (5+5)
- 3a) What are YAC vectors, discuss how are generated, also add a note on the selection of recombinant YAC vector.
- b) What are restriction endonucleases, why are these used, discuss their types and mode of action, also add a note on their applications. (5+5)
- 4a) Discuss the principle of PCR, what different components are used in PCR, also add a note on its application.
- b) Discuss the type of vector used in plant genetic engineering, discuss its key characteristics and how are these generated. (5+5)

Section-B

- 5 a) Discuss in detail different methods for screening and selection of gene libraries.
- b) Briefly discuss gene editing mechanism. (7+3)
- 6a) Discuss the process of DNA foot printing and why is it used.
- b) Discuss the sequencing methodology employing sanger method of DNA sequencing.
- c) Write a note on site specific mutagenesis and its importance. (3+4+3)
- 7a) Discuss how protein-proteins interactions are studied, discuss any one method of studying such interactions.
- b) Discuss applications of Recombinant DNA Technology in Agriculture and Medicine Sciences. (5+5)

x-x-x