

Birla Institute of Technology & Science, Pilani-333031 (Rajasthan)

First Semester 2022-2023

PHA G613: Pharmaceutical Biotechnology

Comprehensive Examination (Closed Book)

Duration- 2 hours

Max. Marks- 30.0

Answers should be brief and to the point.

Use schematic diagrams to support your answers.

Q.1. (A) Briefly describe the infection process of plants mediated by Ti plasmid.

(B) Give a short explanation of the essential components of binary cloning vectors used in genetic engineering of plants.

[3+3=6.0 M]

Q.2. (A) Give a brief description of the molecular beacons used in DNA-based diagnosis.

(B) Describe briefly about oligonucleotide-directed mutagenesis used for protein engineering.

[3+4=7.0 M]

Q.3. (A) Give a brief explanation of the chain termination method used for determination of the sequence of a DNA molecule.

(B) "Primer designing and working out proper annealing temperature is crucial for a polymerase chain reaction". Give proper justification in support of the statement.

[4+4=8.0 M]

↳ 2+2

Q.4. (A) How yeast 2 μm plasmid is used for the cloning of eukaryotic genes?

(B) Briefly discuss about dual plasmid system used in the manipulation of prokaryotic gene expression at large scale.

[3+ 3=6.0 M]

Q.5. Discuss the steps involved in 5'-capping of a newly synthesized eukaryotic transcript.

[3.0 M]

All the Best

Birla Institute of Technology & Science, Pilani-333031 (Rajasthan)
First Semester 2022-2023

PHA G613: Pharmaceutical Biotechnology
Comprehensive Examination (Open Book)

Duration- 1 hour

Max. Marks- 15.0

Answers should be brief and to the point.

Use schematic diagrams to support your answers.

Subparts of a question should be answered in continuation

Q.1. In order to manipulate gene expression in prokaryotic cells, we need strong and regulatable promoters. Give explanation for the requirement. [1+2=3.0 M]

Q.2. Designing probes for diagnosis of diseases by DNA hybridization is very crucial. Briefly discuss the process of designing probes for diagnosis of tuberculosis (caused by *Mycobacterium tuberculosis*) by DNA hybridization method. [4.0 M]

Q.3. (A) Why replication fork looks asymmetrical during the process of replication?

(B) What are the importance of *Bacillus thuringiensis* in genetic engineering of plants?

[2X2=4.0 M]

Q.4. (A) Give four advantages of batch fermenters.

(B) Give two applications of M13 vectors.

[2X2=4.0 M]

All the Best