

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -I EXAMINATION- MARCH-2023

COURSE CODE(CREDITS): 20MS1BT211(3)

MAX. MARKS: 15

COURSE NAME: Genetic Engineering

COURSE INSTRUCTORS: Dr Anil Kant

MAX. TIME: 1 Hour

Note: All questions are compulsory. Marks are indicated against each question in square brackets.

Q 1.

[1.0x 3 = 3]

- a) Give three crisp key points which make genetic engineering different from conventional plant and animal improvement?.
- b) Interpret the relationship between i) Gene Cloning vs Genetic engineering ii) Recombinant DNA technology vs Genetic engineering.
- c) What would be the name of the fourth restriction enzyme isolated from bacterium *Campylobacter jejuni* hypothetical strain Vir03.

Q 2. **Do any three of following**

[2x3 = 6]

1. Let a student create a DNA by joining two DNA fragments with the following features. Would these be called as recombinant DNA or not called recombinant DNA? Give a key reason for your choice in case of every option.
 - a. Two DNA fragments from the same source, able to replicate in an appropriate host.
 - b. Two DNA from different sources, not able to replicate in any host.
 - c. One DNA fragment from natural host and one synthetic DNA fragment, able to replicate in a appropriate host
 - d. Progeny DNA molecules produced via replication of DNA constructed outside cells by joining fragments from two different sources
2. Recreate the 6 bp restriction enzymes sites of hypothetical restriction enzymes and show the fragments generated by their action from given information about their recognition sites i) 5' T/CG ii) 5'GA\C
3. Enlist different potential applications of genetic engineering in the area of Agriculture? Give examples in each case?
4. Demonstrate your understanding about following terms: i)Phenomena of restriction and Modification ii) Endonucleases and Exonucleases and Restriction endonuclease

Q 3.

[3x2 = 6]

- a) Mention general objectives of developing transgenic animals? Give four latest examples of transgenic animals along with elaboration on their development for trait improvement or production of therapeutic biologicals.
- b) Writes about two latest clinical trials of some gene therapy products?