



BRAINWARE UNIVERSITY

Term End Examination 2023-2024
Programme – B.Sc.(FND)-Hons-2022
Course Name – Biotechnology in Everyday Life
Course Code - GEBT402
(Semester IV)

Full Marks : 60

Time : 2:30 Hours

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question)

1 x 15=15

1. Choose the correct alternative from the following :

- (i) In Recombinant DNA Technology, what cuts DNA at specific recognition sequences?
a) Ligases
b) Polymerases
c) Restriction Enzymes
d) Helicases
- (ii) Select the process of introducing recombinant DNA into a host cell called?
a) Transformation
b) Transcription
c) Translation
d) Transduction
- (iii) Select the primary role of restriction endonucleases in Recombinant DNA Technology?
a) DNA synthesis
b) Cutting DNA at specific sites
c) Joining DNA fragments
d) Unzipping DNA strands
- (iv) Identify the term for a mass of undifferentiated cells that forms on the culture medium in tissue culture.
a) Meristem
b) Callus
c) Embryo
d) Protoplast
- (v) Predict the function of vectors in recombinant DNA technology
a) Amplifying DNA fragments
b) Carrying foreign DNA
c) Cutting DNA at specific sites
d) Joining DNA fragments
- (vi) Predict the purpose of gel electrophoresis in molecular biology
a) Amplifying DNA fragments
b) Separating DNA fragments
c) Joining DNA fragments
d) Cutting DNA at specific sites
- (vii) Predict the tool used to transfer proteins from an SDS-PAGE gel to a membrane
a) Agarose gel
b) Electrophoresis apparatus
c) Transfer system
d) Spectrophotometer
- (viii) From which animals were insulin obtained in the early days?
a) Insects
b) Lizard and snakes
c) Cats and dogs
d) Cattle and pigs
- (ix) Name the organ which secretes insulin?

- a) Stomach
c) Pancreas
- b) Thyroid
d) Intestine
- (x) Choose the primary objective of the human genome project.
- a) To find out the functions of the proteins in humans
c) To sequence the entire base pairs that makes up the 23 chromosomes
- b) To sequence base pair of the human Y chromosome
d) To study the gene expression patterns in humans
- (xi) Plagiarism detection software checks plagiarism by providing
- a) Similarity index
c) Content index
- b) Citation index
d) Grammatical error
- (xii) Choose the major ethical issues related to genetically modified organisms:
- a) Claiming the patent rights
c) Unpredictable environmental impact
- b) Biopiracy
d) All the three
- (xiii) Identify the disadvantage of GMO food.
- a) reduction in other plant types, leading to a loss of biodiversity
c) less prone to waste due to disease and aging
- b) easier to store and transport
d) higher in nutrients
- (xiv) Predict the potential therapeutic application of stem cell.
- a) Weakening the immune system
c) Inducing cancer growth
- b) Causing organ rejection
d) Treating genetic diseases
- (xv) A genetic modification with a transgene is the...
- a) random change in genes and they may or may not provide an organism with a beneficial trait.
c) addition of a new gene that did not previously exist in that organism.
- b) change that only occur in the genes the organism is expressing in the environment that caused the mutations.
d) controlled alterations of a specific part of a specific gene designed to improve the traits of an organism.

Group-B

(Short Answer Type Questions)

3 x 5=15

2. Explain main purpose of gel electrophoresis in molecular biology? (3)
3. What are some applications of Recombinant DNA Technology? (3)
4. Explain the significance of gene therapy in medicine using recombinant DNA technology. (3)
5. Explain the purpose of western blotting in protein analysis. (3)
6. Explain briefly on the human genome project and mention any of its 3 objectives. (3)

OR

Elaborate the process of reproductive cloning of Dolly

(3)

Group-C

(Long Answer Type Questions)

5 x 6=30

7. Describe the steps involved in the polymerase chain reaction (PCR) and discuss its applications in molecular biology. (5)
8. Discuss the potential ethical and safety considerations associated with the release of transgenic insects into the environment. (5)
9. Explain the importance of gel electrophoresis in DNA fingerprinting. (5)
10. Explain five ethical considerations regarding the production and use of transgenic animals in biomedical research and agriculture. (5)
11. Evaluate the development and commercialization of the Flavr Savr tomato, emphasizing its significance as one of the earliest genetically modified foods. (5)

12. Outline the key steps in the production of human insulin by genetic engineering method. (5)

OR

Explain the principle of ELISA and provide two applications of this technique in biotechnology. (5)
