BRAINWARE UNIVERSITY

Term End Examination 2024-2025
Programme – M.Sc.(BT)-2022/M.Sc.(BT)-2023
Course Name – Animal Biotechnology
Course Code - MBTE305
(Semester III)

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) Select which of the following experiment is needed for detection of mycoplasma contamination is mammalian cell culture.

a) Southern blotting b) ELISA
c) PCR d) Western blotting

(ii) Infer the major application of viral production in animal cells?

a) Vaccine development b) Enhancing culture
c) Growth promotion d) All of these

(iii) Changes undergone by sperm in the female reproductive tract that enables them to penetrate and fertilize an egg is called

a) Motility b) Dilution
c) Capacitation d) Sensitization

(iv) What is the chemical used for positive selection of integrated genes in transgenics.

a) Pencillin b) G418
c) C320 d) All of these

(v) Which of the following is a method of collecting semen for Artificial Insemination?

a) Electroejaculation b) Electroporation
c) Transfection d) Transformation

(vi) Name the genetically engineered transgenic fish that serves biosensors for environmental pollutants.

a) EnviroFish b) Madaka Fish
c) Glo Fish d) All of these

(vii) Which of the following is a legally approved application of reproductive cloning?

a) Human clone generation b) Cloning Pets
c) Cloning Endangered species d) None of these

(viii) Puja wants to perform protein interaction experiment with one of her newly invented proteins that can be a potent therapeutic agent, which technique can she follow

a) Coimmunoprecipitation
b) Yeast Two hybrid
c) Both a and b
d) None of these

(ix) Cosegregation of a disease or trait with a specific genomic region in multiple families is called

a) Linkage
b) Epigenetics
c) Transcriptomics
d) All of these

(x) Which of the following is a protein biomarker?

a) SNP
b) SSR
c) Allozyme
d) All of these

(xi) Which of the following is the smallest form of functional recombinant antibody molecule?

a) IgG
b) Fab
c) Fd
d) scFv

(xii) Infer which of the following hybrids can theoretically survive in HAT medium?

a) Bcell-Bcell
b) Bcell-Myleoma cell
c) Myeloma cells-myeloma cells
d) Both a and b

(xiii) Name the sequencing technique used for determining epigenetic effects.

a) Exome sequencing
b) Transcriptomics
c) Bisulphite Sequencing
d) All of these

(xiv) What may cause differences in the number of VNTRs at a particular area of a child's DNA?

a) Paternal Mutations
b) Mutations
c) Junk DNA removal
d) Telomere shortening

(xv) Which is the example of toxoid vaccine?

a) Diphtheria vaccine
b) Covishield
c) Polio vaccine
d) All of these

Group-B

(Short Answer Type Questions) 3 x 5=15

2. What is Exome Sequencing? How does it differ from transcriptome sequencing? (3)
3. How can the technique of cryopreservation be applied to the long-term storage of animal cell cultures? (3)
4. What are molecular markers, and how do they contribute to animal biotechnology? (3)
5. What is the principle of Illumina technology that helps it identify the exact number of repetitive bases in a sequence? (3)
6. Explain how does Polymerase Chain Reaction (PCR) facilitate the detection of meat adulteration? (3)

OR

Compare and contrast the advantages and limitations of DNA-based methods with traditional chemical methods in detecting meat adulteration (3)

Group-C

(Long Answer Type Questions) 5 x 6=30

7. Examine the types of common contaminants in cell cultures, their sources, and the strategies for preventing and controlling contamination in a laboratory setting. (5)
8. Differentiate between finite culture and continuous cell lines. Describe the growth pattern of cells in cell culture. (5)
9. Name four different methods that can be used to determine cell viability. Describe in detail one method that can differentiate between apoptotic and necrotic cells. (5)
10. Explain how reverse genetics contribute to gene function assignment (5)

11. Explain the applications of animal embryo culture in biotechnology, focusing on its role in cloning, transgenic animal production, stem cell research, and disease modeling. (5)
12. Explain how Uniprot helps in genome research (5)

OR

Analyze the challenges and ethical considerations associated with artificial insemination in both human and animal contexts. (5)

****