Avinashilingam Institute for Home Science and Higher Education for Women

Deemed to be University Estd. u/s 3 of UGC Act 1956, Category A by MHRD (now MoE)
Re-accredited with A++ Grade by NAAC. CGPA 3.65/4, Category I by UGC
Coimbatore - 641 043, Tamil Nadu, India

Master's Degree Examination – May 2025
II Semester

Class : I P.G. **Time: 3 Hours**
Major : Food Science and Nutrition **Max. Marks: 100**

23MFNC08 Food Biotechnology

Course Outcomes:
CO1: Gain knowledge on the techniques and tools of genetic engineering and food biotechnology
CO2: Recognize the importance of fermentation, xenobiotics, nanotechnology, nutrigenomics and applications of enzyme technology in food industries
CO3: Identify key genetically modified foods and animal tissue culture in the production and safety of transgenic plants and animals
CO4: Explore microbial pathways and appreciate the role of microorganisms in industrial processes
CO5: Elucidate the nutritional and safety aspects of implications of biotechnology in foods

Part A **10 x 1 = 10**
Choose the Correct Answer

1. Identify the enzyme involved in the manipulation of DNA in genetic engineering. CO1K1
a. Primase b. Transcriptase c. DNA ligase d. Restriction endonuclease

2. Select the protective covering of bacteriophage made up of protein molecule CO1K1
a. Plasmid b. Capsid c. Vector d. Filamentous

3. Name the specially designed vessel loaded with nutrients used for microbial growth CO2K1
a. Bioreactor b. Bio-plant c. Down-stream d. Distillator

4. Identify the more stable enzymes that can be reused for industries. CO2K1
a. Natural enzymes b. Artificial enzymes c. Immobilized enzymes d. Free enzymes

5. Name the transgenic food crop that may help in solving the problem of night blindness in developing countries. CO3K1
a. Golden Rice b. Flavr Savr tomatoes c. BT soybean d. Starlink maize

6. Tell which microbes are used for single-cell protein production CO3K1
a. Algae b. Bacteria c. Fungi d. DNA

7. Identify which additive is commonly used as thickeners and gelling agents CO4K1
a. Glucose syrup b. Xanthan gum c. Agar Agar d. Saccharine

8. Select which of the following is produced by fermenting soybeans. CO4K1
a. Yoghurt b. Kombucha c. Miso d. Paneer

9. Name the foreign substances chemical in nature found within an organism. CO5K1
a. Xenobiotics b. Bio-leaching c. Bio-remediation d. Bio-fortification

10. Identify which study deals with the interaction between nutrition and genetics. CO5K1
a. Nanotechnology b. Fortification c. Xenobiotics d. Nutrigenomics

Part B **5 x 6 = 30**
Answer ALL questions
Each answer should not exceed 400 words or two pages

11.a. Explain the scope and importance of biotechnology. CO1K2

(or)

11.b. Describe the cloning vectors commonly used in genetic engineering. CO1K3

12.a. Sketch and label parts of the fermentor. CO2K3

(or)

12.b. Illustrate the applications of biosensors in the food industry. CO2K2

13.a. Discuss the basic requirements of plant tissue culture. CO3K2

(or)

13.b. Outline the importance and applications of single cell proteins. CO3K3

14.a. Classify sweeteners used in the food industry. CO4K2

(or)

14.b. Illustrate the role of microorganisms in vinegar preparation. CO4K3

15.a. Enumerate Write the metabolic phases of xenobiotics. CO5K3

(or)

15.b. Describe the concept and applications of nanotechnology in foods. CO5K3

Part C **5 x 12 = 60**

Answer ALL questions

Each answer should not exceed 800 words or four pages

16.a. Justify the role of enzymes in genetic engineering. CO1K4

(or)

16.b. Enumerate the basic steps and applications of genetic engineering. CO1K3

17.a. Illustrate the different types of fermentation system. CO2K3

(or)

17.b. Explain synthesis and applications of enzymes in the food industry. CO2K4

18.a. Categorize the techniques for gene transfer into plants. CO3K4

(or)

18.b. Describe the production of single-cell cultures in food flavours and colours. CO3K3

19.a. Explain the role of vitamins and amino acids in the food industry. CO4K4

(or)

19.b. Illustrate the steps involved in cheese production. CO4K3

20.a. Highlight the impact of biotechnology on the nutritional quality of food. CO5K3

(or)

20.b. Outline the safety aspects of foods produced by genetic engineering. CO5K4

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