Agricultural & Food Engineering Department
Indian Institute of Technology Kharagpur- 721 302

M. Tech in Applied Botany End-semester Examination, 2011 Subject Name: Food Biotechnology Subject No.: (AG60046) Full Marks: 50
No. of student: 20 Date of Examination: /04/2011 (FN/AN) Time: 3h

Answer any five question

Q.1 What do you mean by Functional food ingredients? Classify functional foods? Why there is growing interest in functional food? Discuss the historical evolution of medical nutrients and emphasize the answer with any two diseases (such as cardiovascular, constipation, obesity etc.). (10)

Q 2 Do you think the term Prebiotic, Probiotic , Nutraceuticals and Functional foods are interrelated to each other ? With biochemical structures and composition correlate the health benefits of Tea polyphenols, flavins, phytochemicals role in disease resistant. (10)

Q.3 Elaborately discuss the mechanism of action of oral vaccine against vaccination of targeted disease? What are the limitations and benefits one can get through, by such upcoming technologies? (10)

Q.4 Describe the microbial hurdle technology? Explain the important hurdles in food preservation? For industrialization of any process/product discuss the importance of hurdle technology? What is the importance of homeostasis, metabolic exhaustion and stress reaction of hurdle technology? Briefly describe the multitargeted preservation techniques. (10)

Q.5 Write note on (any two) (5x2=10)

a) Fortified food
b) Seven principles of HACCP
c) Importance of enzyme in food processing

Q.6 Why foods are genetically modified? How the gene modification is possible? How common are GMO foods and in which way the plants are targeted? Name the GM crops commercially used in production? Elaborate the possible benefits of GM food.
Being a food biotechnologist, how will you improve the agronomic traits? How a scientist having applied botany background can improve the food production using the modern technologies of gene manipulation? (10)

Q.7 Do you believe that cell signaling and nutrition has got any relation in living system? How to distinguish between single cell signaling and multiple cell signaling? With suitable examples explain the nutritional regulation of mTOR signaling pathway and its importance in body metabolism? (10)