

**MASTER OF SCIENCE (DIETETICS AND
FOOD SERVICE MANAGEMENT)**

Term-End Examination

December, 2007

**MFN-003 : FOOD MICROBIOLOGY AND
SAFETY**

Time : 2 $\frac{1}{2}$ hours

Maximum Marks : 75

Note : Answer **four** questions in all. Question no. 1 is **compulsory**.

1. (a) Define the following : 10
- (i) Heterotrophic bacteria
 - (ii) Critical Control Points (CCPs)
 - (iii) Codex India
 - (iv) Universal Product Code (UPC)
 - (v) Anti-caking agents
- (b) Give one example for each of the following : 5
- (i) Food colour from natural source
 - (ii) Adulterant present in mustard oil
 - (iii) Factors affecting microbial growth
 - (iv) Flexible films made from non-fibrous plastic polymers
 - (v) Toxicants in animal foods

2. (a) "Fermentation involves the introduction of the desirable microbes into the food products." Comment on the statement, describing the fermented food preparations used commercially and the micro-organisms involved in their preparation. 10
- (b) Differentiate between "hazard" and "toxicity" in the context of food safety. Briefly, describe the micro-organisms associated with food-borne hazards. 10
3. Briefly, explain the following, giving appropriate examples : 5+5+5+5
- (a) Concerns of genetically modified foods.
- (b) Temperature, an important factor affecting the growth of micro-organisms.
- (c) Spoilage of fruits and vegetables by fungi and bacteria.
- (d) Physical methods for the control and destruction of micro-organisms.
4. (a) Explain the following and discuss their preventive measures : 4+4+4
- (i) Botulism
- (ii) Salmonellosis
- (iii) Aflatoxicosis
- (b) Enumerate the anti-nutritional factors present in food and their ill-effects. 8

5. (a) What are food additives ? List the various classes of food additives, giving examples for each class. 8
- (b) "The PFA Act distinguishes adulterants as those added 'intentionally' and those present, as 'contaminants', due to improper storage, handling etc." Describe this statement, giving appropriate justifications. 12
6. (a) Present a critical analysis on how the new food safety assurance systems differ from the traditional safety assurance programmes. Give examples in support of your answer. 10
- (b) Briefly, discuss the compulsory national legislations in our country to ensure food safety. 10
7. Write short notes on any **four** of the following : 5+5+5+5
- (i) Risk assessment as a component of risk analysis
 - (ii) Significance and functions of packaging in the context of food safety
 - (iii) Pest and rodent control in a food service establishment
 - (iv) Sanitizers used in food industry
 - (v) Bacterial growth curve