

# CERTIFICATE PROGRAMME IN FOOD SAFETY

## Term-End Examination

December, 2007

### BFN-002 : HAZARDS TO FOOD SAFETY

Time : 3 hours

Maximum Marks : 100

**Note :** Answer **five** questions in all. Question No. 1 is **compulsory**. All questions carry equal marks.

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1. (a) Describe the relationship between the following sets of terms in two to three sentences each. Give suitable examples. 10

- (i) Codex Alimentarius — Food safety regulation
- (ii) Salmonella — Disease causation
- (iii) Temperature control — Food safety implications
- (iv) Protozoa — Diarrhoea
- (v) Contamination — Misuse of drugs

(b) Fill in the blanks. 10

(i) GRAS stands for Generally Regarded As \_\_\_\_\_ .

(ii) Biogenic amines are food contaminants of \_\_\_\_\_ origin.

(iii) Metanil yellow is a non-permitted food \_\_\_\_\_ .

(iv) A toxic amino acid causes \_\_\_\_\_ .

(v) Pesticide residues in food can cause \_\_\_\_\_ .

(vi) Cereal-based foods are common sources of Bacillus \_\_\_\_\_ .

(vii) Lead is a poisonous \_\_\_\_\_ contaminant.

(viii) \_\_\_\_\_ is an emerging bacterial pathogen of concern.

(ix) During the \_\_\_\_\_ phase bacteria multiply very rapidly.

(x) Presence of E. coli in water indicates \_\_\_\_\_ contamination.

2. (a) How would you classify the types of hazards ? Give suitable examples. 5

(b) Describe the possible sources of contaminants in food, giving examples. 10

(c) Discuss in brief the health effects of chemical contaminants. Give suitable examples. 5

3. Describe the sources, vehicles, route of transmission and health effects of 5+5+5+5
- (a) *Clostridium botulinum*
  - (b) *Shigella* species
  - (c) *Vibrio cholerae*
  - (d) *Staphylococcus aureus*
4. (a) Identify the basic pattern of growth and death of micro-organisms using an illustration. 5
- (b) Discuss the influence of the following factors on growth of bacteria : 5+5+5
- (i) pH
  - (ii) water activity
  - (iii) temperature
5. (a) What are mycotoxins ? 2
- (b) Describe the sources, types of food commonly involved and health effects of mycotoxins. 10
- (c) List and briefly explain the measures you can take to prevent the formation of mycotoxins in food. 8
6. (a) Define the following terms giving two examples each : 3+3
- (i) food additive
  - (ii) food adulterant

- (b) Discuss in brief the salient features and uses of the following additives : 10
- (i) food colours
  - (ii) flavouring agents
  - (iii) preservatives
  - (iv) antioxidants
  - (v) emulsifying and stabilizing agents
- (c) Give examples of the use of non-permitted additives in food. Explain the reasons why they should not be used. 4
7. (a) Discuss the categories of pesticides of concern to food safety, giving suitable examples. 6
- (b) What are the health effects of pesticides ? Explain in brief. 4
- (c) “No insecticide should be used directly on a food item.”  
Do you agree with this statement ? Give reasons for your answer. 4
- (d) Differentiate between indirect additives and residues. Discuss the effect of veterinary drug residues in food on human health. 6

**8.** Write short notes on any **four** of the following : 20

- (a) Parasitic infestation — health hazards
- (b) Anti-nutritional factors in foods
- (c) Toxicants in plant foods
- (d) Hazards of metallic contaminants
- (e) Water and food associated viruses

