Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/B.TECH (FT)/SEM-8/ID-802C/2011

2011

QUALITY CONTROL AND MANAGEMENT

Time Allotted : 3 Hours *Full Marks* : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following : 10 × 1 = 10

i) The full form of GMP is

a) Good Machine Product

b) General Manufacturing Practices

c) Good Manufacturing Practices

d) none of these.

ii) ISO 9000 Series deals with

a) Quality Management Systems

b) Food Safety Management System

c) Legal regulations of the country

d) Occupational hazards of the system.

iii) At what stage of the problem-solving process would a team most likely use a cause-effect diagram ?

a) Description of the process associated with the problem

b) Definition of the problem and it's scope

c) Organization of possible problem causes

d) Collection of data to identify actual causes.

iv) For Quality Assurance in a food processing unit, the responsibility lies with

a) Processing Department

b) Quality Control Department

c) Everybody in and associated with the activities of the unit

d) Only with the Management Team.

v) A good quality product can only be obtained if the

a) processing conditions are proper

b) if the storage conditions are proper

c) if good quality raw materials are used

d) all of these.

vi) A prepared jelly had a very hard texture. The reason/s is/are

a) the fruit was not selected at right maturity

b) too much pectin was added externally

c) boiling was improper

d) could be all these factors.

vii) The raw material for processing should be washed

a) to reduce microbial load

b) for colour retention

c) for enzyme inactivation

d) none of these.

viii) Quality Assurance and Quality Control are

a) same systems

b) the former is better than the latter

c) the latter is better than the former

d) none of these.

ix) The 'Six Sigma' quality management system was developed by

a) Nokia

b) Canon

c) Motorola

d) Sony.

x) In terms of ingredients that must be legally present, what is the major difference between sugar and icing sugar ?

a) Icing sugar contains starch

b) Icing sugar contains ice

c) Icing sugar contains baking powder

d) Icing sugar contains preservatives.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. 3 × 5 = 15

2. Write short notes on any *two* of the following :2 × 2 { EQ \F(1,2) }

a) Control chart

b) Histogram

c) Six-sigma.

3. According to the AGMARK standards, what are the four different sizes (individual weight in grams) of shell-eggs marketed in India ? According to the PFA, what is 'ice lolly' ?

3 + 2

4. List the eight quality-management principles of ISO that are meant to achieve quality. What are the four major areas under the purview of Good Manufacturing Practices (GMP) ? 5

5. According to the PFA, define 'food preservatives'. Give examples of three 'Class-I' and three 'Class-II' preservatives.

2 + 3

6. What personal hygiene are required by the food handlers ?

GROUP – C
(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

7. What are the expectations of a consumer about quality of a processed food ? Discuss a quality change model by which such expectations may be taken care of. 15

8. Why proper cleaning is important for effective implementation of HACCP in a system ? What is the difference between cleaning and disinfection ?

   A quality assurance officer has taken the weight of a food product 12 times in a day. Each time he has taken weight of 5 consecutive samples.

Calculate the upper control limit, lower control limit and central line for *X*-bar chart (considering no homogenisation of *R* chart is required and A2 is 0·577)

The weights in gram are :

Time No.	***Sample 1***	***Sample 2***	***Sample 3***	***Sample 4***	***Sample 5***
1	126	126	125	125	125
2	124	125	124	124	125
3	125	124	126	125	124
4	123	126	125	124	124
5	125	124	123	126	125
6	124	125	125	126	125
7	124	125	124	124	124
8	125	125	126	125	124
9	124	125	124	123	126
10	125	124	125	126	125
11	123	123	125	125	124
12	124	125	124	125	124

5 + 5 + 5

9. What are food safety activities ? Discuss food safety activities in food processing. 15

10. Briefly describe different steps of HACCP. 15

11. You are the quality control expert in a Food Retail Business handling fresh fruits and vegetables coming from horticulture farms. Briefly describe (with a simple flow diagram) how would you implement the 1st (hazard analyses), 2nd (identification of CCP), and 3rd (establishment of critical limits) principles of a HACCP plan for your chain. 15

12. a) In a small-scale fruit handling and packing line, apples are being packed in primary and secondary packages, and 20% of the apples received from the orchards are defective. On an average how many apples are expected to be defective in a sample of 15 ? Calculate the probability that in this sample, 4 or less is defective. 1 + 5

b) A spaghetti processing line produces spaghetti having an average (μ) diameter of 1·5 mm with a standard deviation (σ) of 0·2 mm. A random sample of spaghetti is drawn from the processing line. Determine the probability that its diameter is

i) between 1·2 mm and 1·8 mm

ii) more than 1·7 mm

iii) less than 1·7 mm. 6

c) What is a cause-and-effect diagram, and how does it help in statistical quality control ? 3