

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. $3 \times 5 = 15$

2. Write short notes on any *two* of the following : $2 \times 2 \{ \text{EQ } \setminus F(1,2) \}$
- 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.



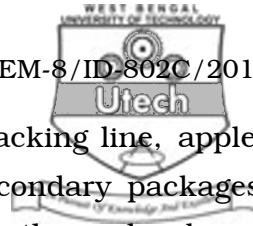
Calculate the upper control limit, lower control limit and central line for \bar{X} -bar chart (considering no homogenisation of R chart is required and A_2 is 0.577)

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

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