



Chartered Quality Institute

CQI Examinations June 2014

Unit 303

Monitoring and Measuring for Quality (Level 3)

26 June 2014

Time: 9.40 – 12.10
(2½ hours)

Notes for candidates

At 9.30, you have 10 minutes' preparation time before the exam begins.
Your exam booklet will be handed out at 9.40.

Attempt **ALL THREE questions** in **Section A**. Attempt **any TWO** questions from **Section B**.
If you attempt three or more questions in Section B, only the first two will be marked.

Questions may be attempted in any order. All questions carry equal marks.
The maximum marks for each part of each question are shown.

Begin each question at the top of a fresh side of paper.
Do not write in the margins.

If you use any additional sheets (graph paper or additional answer booklet) please
write your CQI student number, examination name and date on each sheet.

SECTION A – ANSWER ALL QUESTIONS

QUESTION 1

Customer feedback is vital in the identification of customer satisfaction. The ISO 9001 standard specifically requires organisations to monitor information relating to customer perception of whether the organisation has met customer requirements.

- (a) List **three** ways by which customer satisfaction data may be collected. **(3 marks)**
- (b) Explain **one** advantage and **one** limitation for each of the three methods you have identified in section (a). **(9 marks)**
- (c) Discuss **four** ways by which customer perception may vary from the company's own perception of its performance and how a company might seek to address these differences. **(8 marks)**

QUESTION 2

Before a process can be effectively monitored, consideration must be made of variation in the process.

- (a) Explain the following terms and provide **three** examples for each of these terms:
- i) Common cause variation
 - ii) Special cause variation
- (10 marks)**
- b) For five of the causes that you have identified in section (a), explain **two** typical control measures for each cause that can be applied in order to minimise variation. **(10 marks)**

QUESTION 3

ISO 9001 is based on a number of fundamental quality management principles. One of these principles concerns the 'factual approach to decision making'.

- (a) Explain the meaning and intention of this principle. **(8 marks)**
- (b) Describe **three** benefits of applying this principle to process monitoring and **three** possible disadvantages to the organisation if not applied. **(12 marks)**

SECTION B – ANSWER TWO QUESTIONS ONLY

QUESTION 4

Collecting data to assist in the control of a process can often benefit from graphical presentation methods.

- (a) Describe an example of the type of data that can be graphically presented and include a diagram and description of your chosen tool in your answer.

(8 marks)

- (b) Describe **three** other analysis tools that can be used to present process data graphically, and include a diagram where appropriate.

(12 marks)

QUESTION 5

It may be necessary, in order to ensure customer satisfaction, to monitor certain characteristics of a product or service being supplied.

- (a) Explain **three** differences between the following types of data and give **two** examples for each data type:

- i) Variable
- ii) Attribute
- iii) Subjective

(9 marks)

- (b) Discuss how the application of automatic data collection methods can assist in the collection of one or more of these types of data. Give **two** examples of automatic data collection methods.

(6 marks)

- (c) Describe **five** difficulties associated with the collection of subjective data for the performance of a hospital or hotel service.

(5 marks)

QUESTION 6

Sampling inspection is common in many organisations where large quantities of products are made or services are performed.

- (a) Explain **two** advantages of sampling when applied to incoming materials or in-process inspection.

(6 marks)

- (b) Explain a risk associated with sampling.

(4 marks)

- (c) Explain when and how to use the following two methods for choosing samples:

- i) Random
- ii) Systematic

(6 marks)

- (d) If failures are identified during the sampling process, explain the application of tightened inspection plans.

(4 marks)

QUESTION 7

Dimensional variations often follow a normal distribution (bell-shaped curve). One of the key properties of the normal distribution is the relationship between the shape of the curve and the standard deviation (σ for the population; s for sample).

(a) Plot and label the bell curve for the data set in the following check sheet.

(6 marks)

Value (x)	Frequency
4	11
5	111
6	1111
7	111111
8	1111
9	111
10	1

(b) Calculate the mean (\bar{x}) of x .

(2 marks)

(c) Calculate the standard deviation (σ for the dataset assuming that it covers the total population). Use the following table in your workings:

Show all your formula used and workings.

x	(x - \bar{x})	(x - \bar{x}) ²

(12 marks)